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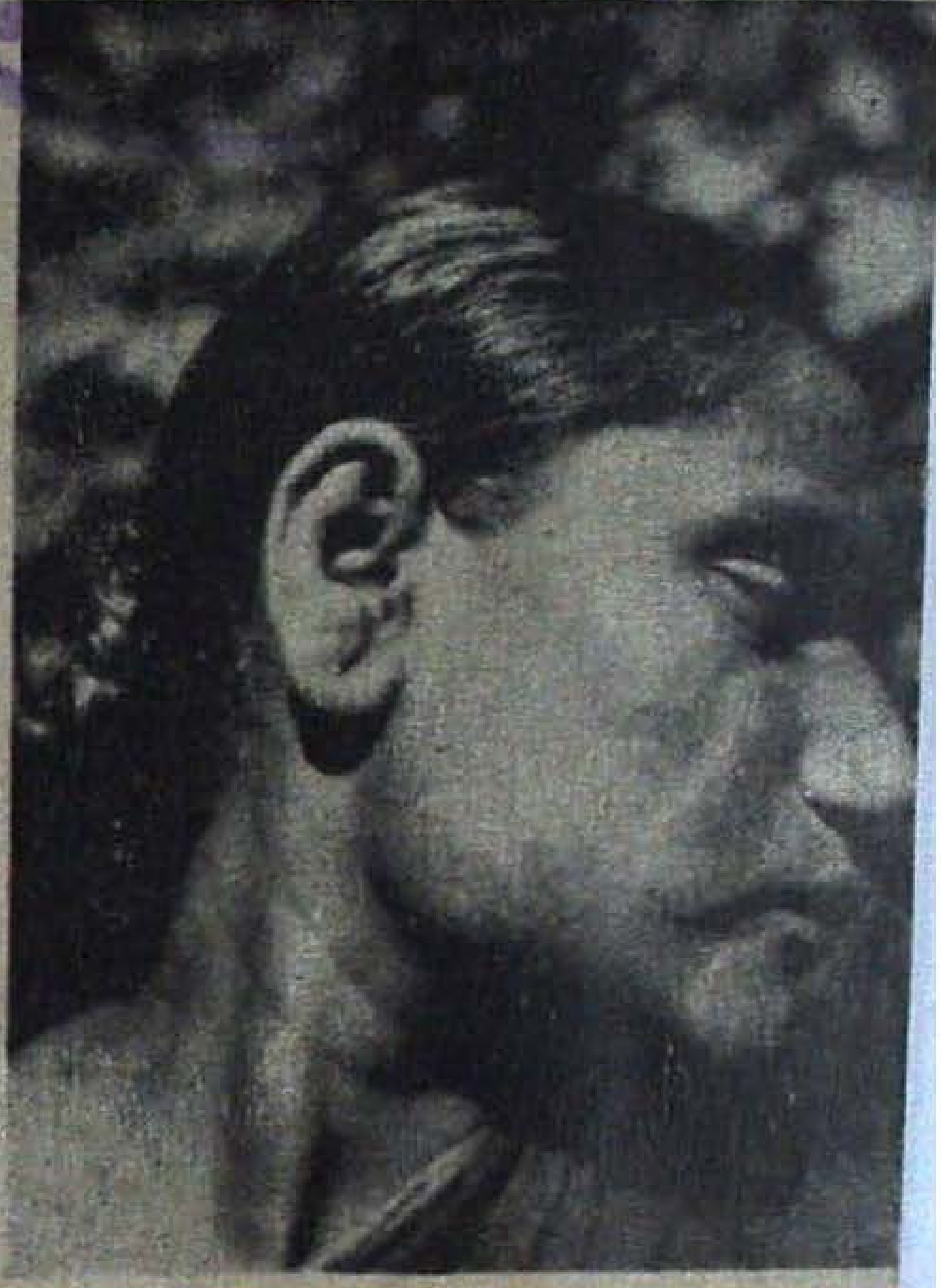

Leprosy Number

Cover page :—Photos show a Leprosy Patient before and after treatment.
For more photos : See pages 86-95.

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What is Leprosy ?

DR. T. V. VENKATESAN, M.B.B.S., F.C.C.P., (U.S.A.)., F.A.A.D.S., F.A.C.A., F.I.A.A., F.D.S. (LOND.)., F.I.A.M. (Skin).

Honorary Physician (Skin), Government Erskine Hospital, Madurai.
Honorary Secretary, Hind Kusht Nivaran Sangh, Madurai Branch, Madurai.

The word Leprosy was derived from the word " Lepra " meaning scaliness of skin.

The history of Leprosy is fascinating. The disease is as old as the word itself. The cradle of Leprosy is found in the upper reaches of Nile. One French authority stated that the Central India may be the cradle of Leprosy. Whatever may be the ancient home, it is sufficient to note that Leprosy is found across a belt, 40° to north and south of equator.

The Lepra Bacillus was discovered by Dr. Armauel Hansen in 1874. Principal Factors involved in transmission :—

Leprosy is a communicable disease transmitted from an infectious case to an uninfected individual. The disease may be divided into two types as to the source of infection, viz. The open or Bacteriologically positive or the closed or Bacteriologically negative case. It is the open case that is the source of infection. Two observations made in recent years are interesting. The first was the discovery that a certain proportion (10 per cent) of healthy contacts of open cases show Lepra Bacilli in every small numbers in the skin. The second observation was that in so called closed cases by careful serial sections by concentration methods Lepra bacilli, could be detected. Thus the question of infectivity in closed cases is reopened. The only feature is that the chances from closed cases is less.

A prolonged intimate contact is not essential in transmission. Repeated intimate contacts may be sufficient, perhaps one contact in ideal case is sufficient. The risk of infection varies in the type of contact, the more intimate the contact, the greater is the risk of infection.

The incubation period is in years, varying from 3 to 5 years, though cases have been seen where the incubation period is less than a year.

The skin is the portal of entry of the organism and the prediliction for superficial nerve plexes is evident by studies by Dr. Khanolkar.

The adults become rarely infected, the period of infectivity is greater below 10 years. There is a greater preponderence in the males in India.

Lepromin Tests and B. C. G. Vaccination

The highly infective Lepromatous cases are Lepromin negative, while the less infective tuberculosis type group are Lepromin positive. B.C.G. Vaccination will convert a Lepromin negative case to positive. It has been suggested the B.C.G. may be used for immunisation purposes. This opens the question of the relationship between the positive Lepromin and immunity. Lepromin test is only a measure of tissue immunity.

Signs and Symptoms

Clinically Leprosy may be considered as Macular Infiltrated and polyneuritic. Before this there is an indeterminate phase. The macular lesions may be :—

1. Maculo anaesthetic (Macular Tuberculoid);
2. Lepromatous Macular lesions; and
3. Dimorphous Macular lesions.

Macular Leprosy :

Data.	*Tuberculoid.*	*Lepromatous.*	*Dimorphous Interminate.*
Size ..	Large ..	Small ..	Initially large and small sattellite lesion.
Number ..	Single ..	Multiple ..	Single large and multiple small.
Distribution.	Asymmetrical.	Symmetrical ..	Large asymmetric and small symmetrical.
Texture ..	Rough and dry.	Smooth and shiny.	Rough and wrinkled.
Edge ..	Definite ..	Vague ..	Large lesions show definite edge while small one vague edge.
Sensation ..	Loss	Little no loss ..	Variable.
Bacilli ..	Negative ..	Positive ..	May be positive.
Leprom ..	Positive ..	Negative ..	Weak positive.

Infiltrated Lesions :

Data.	*Tuberculoid.*	*Lepromatous.*	*Dimorphse.*
Size ..	Large	Small	Large and small.
Number ..	Few	Numerous ..	Numerous.
Distribution.	Outer aspect of extremities, face and scapula and buttocks lesions are asymmetrical.	Symmetrical and all over the body.	Symmetrical and scattered all over the body.
Edge ..	Definite edge: slopes from the centre to periphery.	Indistinct edge.	Edge slopes from periphery to centre.
Sensation ..	Loss	Variable ..	Variable.
Nerves ..	Thickened ..	Not conspicuous.	Enlarged and thickened.
Baillic ..	Rare	Plus plus ..	Plus.

Neuritic type :

This may be mono or poly neuritic in Tuberculoid and Dimorphous but neural involvement is rare in lepromatous type.

Involvement of other systems

Eyes in Leprosy

1. The structures of eye commonly involved in lepromatous leprosy are the sclera, the cornea, the iris and ciliary body; sclearal involvement occurs early and yellowish gelatinous nodules appear at the sclerocorneal junction where the anterior ciliary nerves penetrate. They are usually found on the temporal side, bilaterally and may extend around the limbus to give rise to various types of keratitis as a result of extension into the cornea. Superficial punctuate keratitis is the commonest type and is considered pathognomonic. It is characterised by a milky base over the upper part of the cornea punctuated by tiny white spots resembling grains of chalk. The spots are miliary lepromata. These changes can be seen quite well with a corneal loupe and a torch, but are best seen with the aid of a corneal microscope and slit lamp by this means one may demonstrate glistening nodules along nerve filaments in the cornea. Pannus is very common.

The eyes may be affected due to lesions of 5th or 7th nerves. The involvement of 5th nerve leads to neuropathic keratitis, while the 7th leads to exposure keratitis.

Bones are involved due to—

(*a*) Deposition of Bacilli;

(*b*) Neurotrophic Atrophy;

(*c*) Repeated trauma;

(*d*) Disuse due to paralysis;

(*e*) Secondary infection from the trophic ulceration;

(*f*) Osteoporosis of hormonal original;

The proximal phalanges become thinned out causing concentric bone atrophy.

Tests

Testicular atrophy may occur producing sterility and gynaecomastia.

Mucus membrane

Ulceration of the nasal septum leads to saddle nose. Epistaxis is common. Laryngeal involvement gives rise to husky voice called leper voice.

Prevention of Leprosy

Principles of leprosy control and prevention can be considered under three headings :—

(*a*) Segregation of infective cases coming into contact.

(*b*) Treatment is the treatment of all cases of leprosy with proper follow up.

(*c*) *Education*.—Fear and prejudice should be dispelled. As Shri T. N. Jagadisan writes on this subject :—" We still have to insist that prevention is easier than cure. We still have to educate that leprosy is a disease, not a curse or a shame. We still have to persuade the patient to face the situation resolutely and hopefully and come early for treatments. We still have to demand of our Governments and public that leprosy shall no longer be a neglected subject and that it deserves generous budgets and skilled attention. Above all we shall still have to fight to win for the leprosy patient his rightful place in the world as a man and a citizen.

Therapy

Sulphone therapy.—Dapsone 25 mgm. orally twice a week and gradually increased each fortnight till 30 mgm. twice weekly is reached. There are other sulphone groups of drugs of which sulphatrone is given IM commencing from ½ c.c. IM twice weekly, and increased every 2 weeks IM twice weekly till 3 c.c. IM twice weekly is reached.

Sulphones have a bacteriostatic effect on lepro bacilli. In the lepromatous cases the sulphones prepare the bacillus for more adequate phagocytosis and the destruction of macrophage cells. The clinical improvement in leprosy is far ahead of the bacteriological improvement and therefore inadequate sulphone therapy may result in leaving pocket cell bacilli from which the disease recurs. As much as 5 years treatment may be required in treating lepromatous type. In tuberculoid cases that treatment required is about 3 years though clinical improvement may happen as early as eight months.

Other Drugs in leprosy

(a) *D.P.T.* (*Ciba*-1906) is given as 0.5 gm tablets, commencing with 1 tablet and increasing to 4 tablets per day. It can be given as much as 1½ years by which time, resistance to drug is developed.

(b) *Valdine.*—30 mgm. per Kilo of body weight.

Reactions in Leprosy

Activation reaction.—Occurs in all cases of leprosy especially when the anti leprosy drug is increased rapidly. All existing lesions become rapidly more swollen and arythematous. New lesions may appear and the number of bacilli in the lesions is increased. Neural lesions become aggravated.

2. *Erythema nodus leprosum.*—Is an allergic type and reaction confined to lepromatous leprosy or to Dimorphic leprosy which is passing into a lepromatous type. It is precipitated by Intercurrent infection vaccination, over work and drugs. Bright erythematous lesions occur on any part of the body and often on areas of skin free from leprosy lesions. The lesions are painful burning and cause discomfort.

3. *Lucio's Phenomenon.*—Occurs in difuse lepromatous leprosy with erythematous lesions, purpura and Necrosis.

Management of Lepromatous leprosy.—Steriods are helpful in Lepra reaction for erythema nodosum leprosy A.D.C. (Asprin Doweis powder and Caffcine citras) is useful. P.A.T. (Pot Antimony Tartate) 0.02 mgms. inj. given IV on every other day for 3 doses, then 0.04 gms for other 3 days. Anthemaline or stivolphin 2 c.c. IM every other day × 6 is also helpful.

Steriod with a daily dose of 20 mgm. of prednisolone and 6 doses is a great value in erythema nodosum leprosum. In Activation reaction Mercurochrome 1 per cent 5 c.c. solution IV × 6 Injections is a useful measure. Cortisone group of drugs are generally harmful in acute reaction.

Ancilliary Therapy.—The first duty of the Medical Officer is to see that claw hand never develops. Plastic and Orthopedic surgery play a great role. The possibility of return to society is greater because of the modern approach in the management of Leprosy.

Rehabilitation is "sine qua non" if a leprosy patient has to return to society.

In conclusion, it must be emphasised that leprosy can be treated and orthopedic surgery changes the outlook one of despondency to a life of respondence and activity.

Health Education in Leprosy

The Society is aware of the leprosy problem only because it sees beggar leproys patients on the street. It believes that it is the beggar who spreads infection and that with the removal of all the beggar leprosy patients, leprosy will cease to spread. The facts however are quite different from what the society believes. The problem of beggar leprosy patients is only one tenth of the entire leprosy problem; nine-tenth of the problem concerns those patients who are not beggars and are therefore mixing with the society more freely than the beggar leprosy patients. As long as the society is not aware of these and such other important facts it is not possible to control leprosy.

Some facts.—Of the numerous facts about leprosy and the leprosy probem the society ought to know atleast some. It must know that all leprosy patients are not infectious, and that infectivity does not depend either on the stage of the disease on the extent of deformity. It depends primarily on the resistance which the patient's body offers to M. leprae. Therefore the presence of deformities and ulcers does not necessarily mean that the patient is infectious. The initial sign of the disease is a patch on the skin or some change in the texture and colour of the skin or anaesthesia in some parts. The disease progresses slowly and deformities appear only some years later. For quite a long time a leprosy patient remains unrecognisable to the society. It is only when the deformities begin to appear that the society is able to know. If this unrecognisable patient is of the infectious type he goes on spreading the infection in the society. No legislation can lay its hands on such early infectious cases. There is an effective drug for treatment now, and if it is taken in the early stage of the disease it prevents the onset of deformities. If

one wants to save oneself, one should see that all the patients take treatment. This will result in reducing the infectivity of infectious patients. It will result also in arresting the disease process of infectious as well as non infectious patients and thus save them from deformities. Patients who have not developed any deformities will like to be treated; but they do not like to be known in the community as leprosy patients. For the same reason, they do not like to be treated in leprosy clinics where there is a possibility of their disease becoming known to the society. The total number of patients in the country is round about 20 lakhs. Of them about four lakhs are infectious. So many infectious patients cannot be isolated in institutions because there are not enough institutions in the country and enough institutions cannot be built within our financial resources and stipulated time. What is practicable, convenient, easy and the minimum is to treat all of them in out patient departments. For the non-infectious patients all that is necessary is treatment in out-patients departments. There is no need to isolate them. For the infectious patients, treatment and home isolation are enough. If this arrangement is adopted, the society can be saved from various unsightly aspects of the problem. No one will then develop deformity. No new patient will then turn into a beggar. The quantum of infectivity in the community will gradually be reduced and vanish in due course. The disease will be controlled.

Health Education in Leprosy.—When so much can be achieved merely by treating every leprosy patient, what we find is that out of 20 lakhs of patients only about three lakhs are receiving treatment. It is due to ignorance and fear that the remaining 17 lakhs remain untreated. The immediate step in tackling the leprosy problem therefore is to motivate the society to learn some facts about leprosy, and to make arrangements to impart them. In short, education is the real need. Education means not only the education of the people, it also means the education of the medical profession.

The aim is to see that patients take treatment in the early stage. This can be achieved partly by education, and partly by carrying out surveys for case detection. In additional to this, facilities for treatment have to be provided. Thus the leprosy control work consists in doing SET work when " S " stands for Survey, " E " for Education and " T " for Treatment. This pattern suits rural areas well but in the urban areas, a slight modification in that pattern is necessary because of the sophisticated nature of then people. They will not submit easily to surveys and will not like to be treated in leprosy clinics for the fear of ostracisation. The modification therefore is that the people in the cities will have to be made leprosy conscious and the doctors will have to be made aware of the need to diaguose and treat the leprosy patients in their own dispensaries, whether private or public. Doctors will have to be persuaded to appreciate the harm the leprosy patients are forced to inflict on the society because of the unwillingness to diagnose them in the dispensary. They will have to be persuaded to diagnose and treat leprosy patients in their own dispensaries alongside other patients suffering from diseases other than leprosy. Even in public dispensaries, the practice of setting up sheds exclusively for leprosy patients will have to be given up.

Impact on Medical Profession.—A few centres working towards these ends have been opened in some towns and Cities in India. They are called Health Education Centres. Their work is on two fronts. On one front, attempts are being made to tell the people when to suspect leprosy, and what manner of behavious towards the leprosy patient will bring about social good. On the other front, medical practitioners are being persuaded to welcome their clientele wanting to have suspicions patches diagnosed and treated in their own dispensaries. On the first front, advice is being given to the people to insist on an annual medical check-up at the hands of their family physicians. On the other front, doctors are told to expect some of their clientele, reporting for such check-up, and asking for treatment in their dispensaries. The impact

of attepmts on these two fronts, has hitherto been that the doctors are finding it necessary to learn the diagnosis and treatment of leprosy, and at the same time become leprosy-conscious. They look out, when they are examining their patients coming for other diseases, for evidence of leprosy, and if such evidence is seen they treat them for leprosy too. It will thus be seen that medical men do not have to go out of their way to diagnose and treat leprosy patients. Leprosy is a disease like any other and the general practitioners must therefore treat leprosy patients as a part and parcel of their general medical work. The arguments usually advanced by some doctors for not treating the leprosy patients are all baseless.

It is interesting to examine these arguments, very commonly advanced. The first is that by permitting infectious patients in the dispensary, the doctor exposes his own clientele to leprosy. The second is that the presence of deformed leprosy patients will scare away his clientele and tell adversely on his practice. The third is that the leprosy patients are paupers and cannot afford to pay for the treatment.

In advancing the first argument about the infectivity of leprosy, medical men forget that in our country about 80 per cent of leprosy patients are non-infectious. There can therefore be no scientific objection to permit these patients to attend general dispensaries. Even in respect of the remaining 20 per cent who are infectious, one has to adopt a realistic approach. Such patients among them who have gross deformities will not mind attending leprosy clinics or Government dispensaries. But those who have not yet developed such gross deformities avoid going to leprosy clinic. They will therefore remain untreated unless they are treated in private and public general dispensaries along with the other patients so that they are not known as leprosy patients to the society. It is absolutely necessary to understand this psychology of the early cases. If the doctors debar these

infectious cases from their dispensaries they will remain untreated and it will be dangerous for the doctor's clientele, since they will be exposed to these infectious cases at hundreds of places during the course of their daily life. By debarring these infectious cases in his dispensary, the doctor may cut off only one place of exposure but what about the contact that his clientele has at hundreds of other places? By debarring them from the dispensary the doctor is actually doing a great harm to his other clientele, because he is robbing the patients of the only chance they have to become non-infectious. If the doctor is sincerely interested in saving his cliente from leprosy, the only rational thing he has to do is to treat even the patients in his dispensary and make them non-infectious so that their contact ultimately becomes innocuous. There is greater public safety, in treating even infectious cases in private dispensaries than in debarring them from these places and keeping them infectious.

In advancing the second, the doctor seems to equate leprosy necessarily with deformities. He should realise that only about 10 to 15 per cent of leprosy patients have very gross deformities. Quite a large number of them have already become beggars. The few remaining grossly deformed patients are still in the society but as they are already known to the community as leprosy patients they have nothing to conceal. They therefore do not mind going for treatment to leprosy clinics. But the remaining 85 per cent have not yet developed gross deformities. They would like to be treated but they do not want to be known as leprosy sufferers to the community. These patients have therefore got to be treated in private and public general dispensaries along with patients suffering from other diseases. These patients do not want to be marked out in any way as leprosy patients. It is therefore wrong to treat them under separate sheds in Government or municipal hospitals. Since these patients do not having gross deformities their presence in private and public dispensaries is not likely to scare away the other patients.

In advancing the third argument the doctor does not know the facts once again. About 90 per cent of the patients who want to be treated by the private practioner are able to spend for the drugs and will be willing to pay.

To put it in a nutshell, there is no reason for any medical man to debar a leprosy patient from his dispensary, private or public, or to refuse to treat him. Every medical man has now, without losing anything, a chance to join hands in the crusade against leprosy. His co-operation will be appreciated by the leprosy sufferers, the community and all the workers and will add to the prestige of the medical profession.

[An extract from the book "Hints on Diagnosis and Treatment of Leprosy" by Dr. R. V. Wardekar, M.D., Director, Gandhi Memorial Leprosy Foundation, Wardha.]

Materials on Leprosy available in Health Education, Bureau, Madras:

Booklet

LEPROSY (Tamil)

Film

ARREST LEPROSY (English)

Treatment of Leprosy

DR. DHARMENDRA,
Director, Central Leprosy Teaching and Research Institute, Chingleput.

Sulphones have marked a great advance in the treatment of Leprosy.

The introduction of sulphones for the treatment of leprosy a little over two decades ago brought about a revolution in this field, and has brought a new hope to the patients. They have changed the whole outlook on the disease and persons suffering from it. These drugs are now extensively used with benefit, and their use should be made even wider by trying to reach these drugs to all the patients suffering from this disease. An impression has however been created in the public and even in several medical men that treatment of leprosy has now become very simple and very easy, and that the sulphone drugs have solved the problem regarding the treatment of leprosy. This hopeful outlook is quite welcome, and may be correct for a large number of cases with the mild form of the disease, and specially those who come under treatment in the early stages. There is, however, no justification for such a complacency with regard to treatment of leprosy in general. Treatment of leprosy should not be considered as synonym with sulphone treatment.

Drug treatment alone not sufficient

Undoubtedly sulphones have marked a great advance in the drug treatment of leprosy, but it should be realised that merely the routine drug treatment with sulphones or any other drug or drugs is not the only thing required in quite a

number of persons suffering from leprosy. Apart from the routine drug treatment of the disease, there is need for drug and other forms of treatment for special symptoms of the disease, simple methods of physiotherapy, and corrective surgery whenever indicated. In addition, there is need for the education of the patients to take proper care of their hands, feet and eyes, in order to prevent serious complications and consequences like deformities, ulcers and loss of sight. Though strictly speaking this last activity is a part of health education of the patient, it should really be considered as a part of treatment, only with the difference that it is preventive treatment.

Need for comprehensive treatment

The purpose of this article is to stress that persons engaged in the treatment of leprosy patients should think in terms of not only the routine drug treatment but should think of the *treatment as a whole.* It is proposed to consider herein very briefly the treatment of leprosy under the following four heads :—

(1) Routine drug treatment of leprosy,

(2) Drug and other forms of treatment for special symptoms and complications of the disease,

(3) Simple methods of physiotherapy, and

(4) Education of patients in the care of hands, feet and eyes.

The subject of reconstructive surgery is not considered here, as that part of the treatment has to be left to a surgeon with special experience in the methods of orthopaedic and plastic surgery.

Routine drug treatment of Leprosy

(i) *Sulphone drugs.*—The routine drugs for the treatment of leprosy are the Sulphone drugs. Amongst the sulphones the drug of choice is the parent compound

Diamino-diphenyl-sulphone (DDS), which is also known as the mother sulphone. DDS is mostly given by mouth, but some workers prefer to give intramuscular injections of suspensions of the drug which can be given once a week or once in two weeks. However, the most popular method is the oral administration of the drug.

A consideration of the dose of DDS is an important matter. A start should be made with a very small dose, say 25 mgm. (0.025 gm.) per day, i.e., a total of 150 mgm. (0.15 gm) per week, the drug being given on six days a week. The initial dose should be very gradually increased over a period of 8 to 12 weeks to a maximum of 100 mgm per day or a total of 600 mgm. (0.6 gm.) per week. Even this small dose may be on the higher side and still smaller doses are likely to be effective. It should be clearly borne in mind that higher doses have no advantage but that they have a definite disadvantage as they may precipitate bouts of acute exacerbation of the disease, because of which treatment may have to be suspended for varying periods. This important fact is, however, not as well recognised and appreciated as it should be, because one often sees patients suffering from acute exacerbation caused by an over dosage of sulphones.

(ii) *Other chemotherapeutic drugs.*—Since sulphones take a long time in bringing about a complete cure and bacteriological negativity, investigations have been in progress to find out more effective and more quickly acting drugs. A number of drugs other than sulphones have no doubt been found to be effective against leprosy, and this is certainly a great advantage. However, none of the newer drugs have been found to be more effective than sulphones, which still remain the choice drugs for the routine treatment of leprosy. A combination of these newer drugs with sulphones, although reported on favourably by some workers, has not in general been found to be more effective than sulphones alone.

Some of the newer drugs, are, however, of value in some patients of leprosy who cannot tolerate sulphones, though many patients intolerant to sulphones are found to be intolerant to the other anti-leprosy drugs also. Of these other drugs a mention may be made of Thiosemicarbasone, Diphenyl thiourea (DPT or Ciba 1906), and long acting sulphonamides like Laderkyn. I.N.H. is also very effective, but drug resistance to it develops after a few months. In patients intolerant to sulphones, it may be a good thing to start the treatment with I.N.H. and then to introduce sulphones in very small and gradually, but cautiously increasing doses after 1 to 2 months treatment of I.N.H., while decreasing the dose of I.N.H. and withdrawing it altogether after about three months. In case of the long acting sulphonamide drugs, an advantage is that the drug has to be given once or twice a week only.

As a general rule it may be said that normally workers treating leprosy cases should confine themselves to the use of drugs of proved value, and leave the trial of newer drugs to centres and institutions having adequate facilities for undertaking such investigations properly.

2. Drugs and other Treatment for Special Symptoms

During the long course of the disease, there frequently arise acute, sub-acute or chronic symptoms and complications for which sulphones are of no value, and may even be harmful if continued in the acute stages. These special symptoms are referred to below and their treatment indicated very briefly.

(i) *Acute exacerbation of the disease, commonly known as 'reaction'*.—With the onset of reaction the sulphone treatment should be suspened, and when re-started after the subsidence of reaction, the drug should be given in a much smaller dose than that at the time of the onset of reaction.

Drugs for the treatment of reaction include P.A.T. (Potassium Antimony Tartrate) given intravenously, and Fantorin (a trivalent antimony compound) given intramuscularly. In field conditions an anti-malarial synthetic drug (such as Nevaquin or Avlochlor) may be given orally. In severe and persistent cases of reaction, where the above stated drugs are not effective, corticosteroids have to be given for the control of the reaction. The commonly used doses of the various drugs for the treatment of reaction are indicated below.

Potassium Antimony Tartrate is given intravenously in 1 cc. doses of a 2 per cent freshly prepared solution, to which 10 cc. of a 10 per cent calcium gluconate solution may be added; the injections are repeated every other day to a total of 6 to 12 injections. Fantorin is given intra-muscularly in 2 cc. doses; in this case also injections are given every other day to a total of 6–12 injections. In case of Nevaquin or Avlochlor, etc., one tablet of any of these drugs is given twice or thrice a day for a week or so, and then the dose is reduced to one tablet daily and finally stopped after a few days. Of the corticosteroids, the most popular preparation is Prednisolone (Deltacortryl, Deltacorlin, Histocorlin, etc.) available in 5 mgm. scored tablets. Treatment should be started with 3 tablets a day which may be maintained for three or four days and then the dose gradually reduced, the treatment being tailed off and not suddenly stopped. There are available other analogues of prednisolone (Trimacinalone, Dexamethasone, and Betamethasone, etc.) of which the dose is much smaller, but these preparations are more expensive. Corticosteroids should be used only to ride over the acute phase, and their use should not be unnecessarily prolonged.

It should be clearly borne in mind that drug treatment alone may not be sufficient for the treatment of reactions. In case of pain and swelling in limbs, it may be necessary to rest the parts with the help of appropriate plaster of

paris splints. In case of the swelling of the hand, it should be put at rest in the functional position with a slab of plaster applied to the front of the forearm and extending into the palm. In case of feet, a below the knee plaster cast should be given, specially if there are signs of development of drop foot. After the subsidence of the acute phase, appropriate physiotherapeutic measures should be adopted.

(ii) *Neuritis.*—Neuritis is very frequently seen in leprosy, and at times the condition is very acute and painful. This may occur during reactions or it may be unassociated with it. If it occurs during reaction, the treatment for that condition may suffice, or something special may have to be done. Of course, if it occurs unassociated with reaction, it will have to be treated as such.

The drugs indicated in neuritis are analgesics and large doses of Vitamin B, specially B and B12. In acute cases corticosteroids may have to be given. If systematic treatment with corticosteroids does not suffice, a mixture of Prednisolone and Procaine may be given perineurally. For this purpose a mixture containing 5 cc. of I per cent Procaine and 1 cc. of Prednisolone (or any other injectable analogue) is injected in the tissue surrounding the inflammed nerve. The injection may have to be repeated for a few times at weekly intervals or even more frequently.

Apart from the drug treatment, other measures will be required to deal effectively with neuritis. In acute cases complete rest of the nerve is essential; in cases where there is any paresis or paralysis of the muscles supplied by the nerve, a plaster of paris splint should be applied to rest the nerve and affected part. In sub-acute cases local application of heat in the form of diathermy, infra-red, and wax bath, etc., may be helpful. In the chronic cases surgical interference may be necessary in the form of partial decapsulation, or slitting the capsule at various places if it is adherent to the nerve. The

present consensus of opinion however is that a nerve should not be interfered with surgically unless there is evidence or suspicion of an abscess inside the nerve.

(iii) *Iritis.*—Iritis, or more correctly speaking iridocyclitis, may be chronic or acute. The chronic condition is insidious in onset and may cause no symptoms, or only some dull pain or slight watering. For its detection, periodic examination of the eye is necessary, when its presence will be revealed by the pupil, which may be narrow, not dilating or dilating sluggishly and irregularly in response to light and atropine. The acute condition may supervene on a chronic one, or may develop suddenly during a reaction. In the acute condition there are present the usual signs of acute iridocyclitis due to other causes. There is pain, watering, redness and photophobia. Examination will reveal circum-corneal congestion, and a small fixed pupil which does not react to light.

In all cases of chronic iritis or iridocyclitis the pupil should be kept dilated with drops of 1 per cent atropine. The drops should be used twice a day until the pupil is fully dilated, and thereafter once a day. This will prevent adhesions between the posterior surface of iris and central parts of the lens; if adhesions occur, they will be at the peripheral parts of the lens, thereby minimising interference with vision. In case use of atropine has to be continued, the patient should be given a pair of 3 diopter spherical lenses so that he can focus on nearby objects.

In cases of acute iritis or iridocyclitis the need for atropine becomes all the more urgent, and the application has to be made more frequently. When the condition is severe, local use of corticosteroids, in the form of suspension or ointment, is indicated in addition to atropine, in order to reduce inflammation. Hot fomentations to the eye are very comforting and beneficial in the acute cases. Dark glasses should be provided to protect the eye from glare.

(iv) *Lagophthalmos.*—The inability to close the eye and the absence of blinking lead to abnormal exposure of the cornea to irritants, dryness of its surface and its inflammation (Keratitis). Corneal ulcers may develop and may become infected; sepsis may lead to further complications.

Drops of sterile liquid paraffin or some bland oil should be instilled into the eye specially before going to bed. and protective spectacles which may be tinted or goggles should be used. Zinc sulphate drops may also be used.

In more severe cases, where there is complete lagophthalmos and the eye remains permanently open, some surgical measures to make the palpabral fissure narrow is required. The easiest procedure is lateral tarsorrhaphy, but the results are not very satisfactory and not lasting. A static sling of sterile silk or nylon passed round the margins of the lids, which is later removed after lid margins have fibrosed, gives a little better result. But the best results are obtained by the plastic operation using a sling made out of an activated and innervated sling of the adjacent temporalis muscle. For this procedure, however, the services of an experienced plastic surgeon are required.

(v) *Nasal symptoms.*—The nasal symptoms calling for treatment will include leprous rhinitis with excessive and foul discharge, partial obstruction due to crust formation, ulcers, and epistaxis. The sulphone treatment may suffice to clear up the nasal symptoms, without the need for any local treatment. In case any local treatment is required, the local application of iodised hydnocarpus oil or esters is very useful. If any crusts are present, they may first be removed by softening with plugs of cotton wool soaked in olive or coconut oil, and douching the nasal cavity with a 2 per cent solution of sodium bicarbonate.

Deformities of the nose caused by destruction of soft parts and the cartilagenous part of the septum can be corrected by plastic surgery, but for that the services of an experienced plastic surgeon are needed.

(vi) *Deformities.*—Deformities in leprosy are usually paralytic due to affection of nerves and paralysis of muscles supplied by them. Sometimes, however, they may be non-paralytic, following on repeated attacks of lepra reaction accompanied with erythema nodosum leprosum (E.N.L.) and subcutaneous nodules (SCN), and consequent changes in the skin and subcutaneous tissue, or by osteoporotic changes in the small bones during reaction.

The best method of dealing with deformities is to prevent or minimise deformities. In case of paralytic deformities this can be achieved by adequate treatment of neuritis, proper care and protection of the anaesthetic extremities from injuries and burns, and timely treatment of such injuries. In case of non-paralytic deformities, they can be prevented or minimised by keeping the affected parts (hands and feet) at rest during reaction by the use of appropriate splints, and later by the use of appropriate physiotherapeutic measures.

Mild and early deformities can be treated by appropriate physiotherapeutic measures including massage, exercises, wax-bath, and splinting. Well established deformities have to be treated by reconstructive surgery, but for this the services of an experienced orthopaedic or plastic surgeon are needed. With the reconstructive surgery, there will be need for pre- and post-operative physiotherapy.

(vi) *Trophic ulcers.*—Trophic ulcers constitute a very troublesome and crippling complication. They are most commonly found in the sole of the foot, especially in the forefoot, but may sometimes be found in other places like lateral side of the ankle, elbow and hand. The underlying cause of these

ulcers is the damage to nerves and the resulting loss of sensation, specially the sensation of pain. But in the actual causation and persistence of ulcers various other factors play a role, such as undue stress and pressure of body weight on certain points specially during walking, repeated injuries, burns and certain as yet little understood circulatory changes. The ulcers are later infected by pus-producing organisms, become deep, and may result in the destruction of soft parts and even bones.

As in the case of deformities, the best method of dealing with ulcers is to take care to prevent them. This is possible if the patient is made to realise the disability and handicap which he suffers on account of loss of sensation of pain, the presence of which is a great protector in normal individuals. He should be educated (as described later) to use his feet keeping the disability in mind.

In the treatment of these ulcers, the most essential steps are: (1) eliminating the stresses caused by walking—by resting the foot in the acute stages, and application of plaster cast in the later stages; (2) eradication of the infection—by adequate local treatment by removing slough, foreign bodies and sequestra, providing free drainage, judicious use of antibiotics and use of occulsive dressing to prevent re-infection from outside; and (3) preventing recurrence of ulceration—by protecting the foot and the scar from injuries and internal stresses by using appropriate footwear, taking good care of the foot (daily inspection of the foot for injuries, etc., and prompt treatment of the same) and careful use of the foot (avoiding long and fast walks, running, jumping, etc.).

3. Physio therapy

Physio therapy is of great value in preventing or minimising deformities, and in preventing onset of stiffness of joints. When such changes are already present, physio therapy helps to mobilise the fingers and to make

the joints supple. In cases with hands already deformed, physio therapy is necessary to prepare the parts for necessary reconstructive operations, and after the operation to re-educate the patient so that maximum benefit is obtained from the operation.

The simple methods of physiotherapy include oil massage, active and passive exercises, wax-bath and splinting. For lack of space no description of these measures is included here.

4. Education of the Patient

The patient should be educated in the correct use of hands, feet and eyes, so that serious damage to the parts and troublesome complications and deformities can be prevented. As already stated earlier, this activity should be considered as a part of treatment (preventive treatment). He should be asked to observe the following instructions.

Care of Hands :

(1) Not to touch hot things, including hot foot and hot drinks with unprotected hands.

(2) Not to use excessive force in holding or gripping objects with hands. The patient must train himself consciously to grip less tightly and with just the right amount of force.

(3) To examine hands after hard work, at least once a day, for any injury, wound or blisters.

(4) In case of any injury, wound or blister being present, to take immediate steps to clean and dress the wounds or to get them dressed. If necessary a doctor should be consulted. The injured part should not be used at all and should be given complete rest.

(5) To massage hands and fingers daily with some vegetable oil and to carry out exercises of hands as instructed by the doctor.

Care of Feet :

(1) To protect feet from injury, not to walk on bare feet but to use shoes or other suitable footwear in the preparation of which *no nails have been used.*

(2) Not to walk for long distances at a stretch and not to stand for too long at a stretch. To avoid fast walking, running and jumping, etc.

(3) To inspect his feet for any injuries, blisters, and thorns, etc., at least once a day.

(4) In case of any injury, wound or blister being present, to take immediate steps to clean and dress them or have them dressed. If there be any thorns they should be pulled out carefully.

(5) In case of ulcers, to see his doctor to have the ulcers cleaned, dressed and the foot immobilised with plaster cast; not to walk on ulcers and to give absolute rest to the ulcerated foot.

Care of Eyes :

Timely attention to the eyes can prevent serious eye complications, which may otherwise ultimately lead to blindness. Impairment or loss of sight is far more serious to a patient of leprosy with loss of skin sensation, than to a person who has no loss of skin sensation. A leprosy patient should therefore take special care of his eyes.

(1) Report any impairment of vision, or any other eye symptoms such as dull pain, to the doctor and request him to examine the eye carefully.

(2) If there is difficulty in closing the eye by bringing the upper and lower eye-lids together (i.e., if there is lagophthalmos) take the following precautions :—

(i) Use dark glasses to prevent glare and to protect the eyes from dust, etc.

(ii) Use some mild bacteriostatic drug such as zinc sulphate drops.

(iii) To prevent dryness, put some bland oil into the eyes, before going to sleep.

(iv) Request the doctor to arrange for the necessary operation for correcting the deformity and reducing the gap between the two eye-lids.

(3) If acute eye symptoms such as pain, redness and watering develop, stop the sulphone treatment, and report at once to the doctor for proper treatment of the acute eye condition. After the acute symptoms are controlled, the sulphone treatment should be started with a very small dose, according to the advice of the doctor.

The Social and Psychological Aspects of Leprosy

T. N. JAGADISAN,
(*Organising Secretary, Indian Leprosy Association, Trustee, Cheshire Homes in India.*)

On his way to attend the Eighth International Congress of Leprosy at Rio de Janeiro in September 1963, *Mr. Jagadisan visited England and was the guest of honour at Founders' Week-End. This is an extract from the text of Mr. Jagadisan's Speech, which was published in 'Cheshire Smile' the Quarterly Magazine of the Cheshire Homes —EDITOR.*

" Now I must very briefly outline some of the facets of this problem of leprosy because I should not really roam all over it, lest I should really give you a confusing picture. Now in handling leprosy we have to unlearn as well as to learn. We have grown with so many old ideas, ideas that have prevailed through the centuries that we have got to make a very strong and alert effort to shake off old notions and absorb new notions in such a way that we take it deep down, deep enough to influence our behaviour. In the past there have been two attitudes, in fact, a kind of ambivalent attitude in society towards leprosy. The masses at large feared leprosy, abhorred leprosy, shunned the leprosy patient, while compassionate souls sought them, served them, rejoiced in serving them. To my mind this ambivalence has to be broken, if we are to put forward the new idea. That is why, again and again I resist any attempt to make leprosy work heroic, and to regard leprosy as something that has to be approached with a special dedication. No doubt dedication

is necessary for this as for any other work. I strongly resist this because I fear that in the new interest that is growing in leprosy all over—especially in countries which have no leprosy problem, this kind of ambivalent attitude may result in some people getting terribly interested, feeling that they are privileged in doing this service, but the masses at large going on as before.

What we are now trying to do—I am glad that there are some medical men here who are already doing it I believe—is to take out leprosy as a subject apart, to be dealt with in special hospitals, by specialists alone, and to integrate the services for leprosy patients with general medical work, in order that leprosy should no longer be looked upon as some thing alone, in order that the leprosy patient may not be alone.

Happily there are three or four facts which have lifted the veil of darkness over leprosy and made it a subject which is capable of being handled as any other subject, as any other communicable disease; For instance as tuberculosis is handled.

Leprosy has become a curable disease though it takes a little time in some cases. But it is definitely a curable disease to-day. Deformity which has been the one terror of leprosy in the past, the great terror is also being now abolished. We can now teach patients those methods by which they can prevent deformity, they can correct deformity. Established deformity can be a thing of the past. We also know that, the vague generalised horror of leprosy, that acute fear of infection is unreasonable, and that by understanding whether a case is infectious or not and by taking the same preventive precautions we take in any other preventable disease, in any other communicable disease, you can achieve the results. In the past we have always been talking of isolation and segregation. One of the things that I am going to

ask the VIII International Congress of Leprology at Rio De Jeneiro to do is that we speak of preventive measures prophylactic measures when we speak of the need of the patient having to take certain measures to protect others, rather than to talk of segregation and isolation which suggests the rigour of the ostracism of mediæval days. I think patients would co-operate more when they do that. It is the fear of being unwanted it is the fear of being thrown out, that really makes the patient refuse to co-operative with out efforts.

In countries where a pristine or primitive civilisation still exists, perhaps, the patient is indifferent, the mental agony is not mearly so much, and what we have to face there is so much, and what we have to face there is the indifference of the patient. For leprosy in the initial years is a disease that does not come with any sense of urgency. There is no fever, there is no pain, there is nothing that calls for attention, and so it is neglected. But in countries with a fair degree of sophistication of civilisation, nearly always the recognition of the disease, the knowledge that one has leprosy, comes upon the patient with a shock, which he is unable to bear. He tries to keep it a great secret may be from his own wife, from his own brother form his own family, for sometime, and from his neighbours. For he fears that he might be put away, that this world of live and friendship and cheer and joy, this world which we love so much, might recede away and away from him. So he becomes alone, and it is only those who have known the aloneness of the alone in some context of life who can really picture this mental torment. So that in those very years when, if treated, he can get well and completely well, his one business and only business is to hide, to hide. to hide and the strain becomes intolerable until the disease is aggravated and he can no longer hide it, and then he comes for treatment and though now-a-days it is not too late, it is certainly too late

sometimes to prevent probably an eye condition which he could have been saved from or some deformity which has to be corrected.

So the public, in the interest of the patient, in the interest of the communities welfare, has to develop a reasoned attitude which neither exaggerates the fear of leprosy, the danger of leprosy, nor minimises it, and enables the patient to own leprosy just as any other disease is owned. It should by possible for a person to say to his neighbour, who often whisprs and who looks suspiciously at him, that he is taking treatment, that he is improving. Leprosy should be brought into the open. It should be made a discussable subject, as the leprosy patient should not have to feel that it is socially an unacceptable disease. But unhappily there are, in several parts of the world, people who have already become unaccepted and education in any matter as you know is a slow process. Therefore, while we should do everything in our power to bring a new state of things, and while we should direct all our endeavours in such a way that we do not perpetuate a stigma that we do not strengthen the old separatist view of leprosy. we have to look after those who have been thrown out, and to assure them and to give them psychological, physical and social rehabilitation.

Attempts are being now made to do this. A great British surgeon, Dr. Brand, has developed surgical techniques, and phyiso-therapy methods by which deformity could be prevented. Another great British doctor, Dr. Cochrane to whom I owe more than I can repay, especially for the opportunity he gave me for this work, is doing research on a wide scale to find quicker acting remedies and to develop immunological methods. All these trends should be strengthened. Much also is being done by Governments, Missionary organisations and other lay organisations, in dealing out a drug called D.D.S., which you may wonder, costs only 4 rupees a year, six shillings a year to treat a patient for a whole year. And

please remember that though in some countries happily leprosy is no problem, it is not a disease of only an unfortunate few, but a disease of millions. So every one now, naturally the Government and many organisations, are putting up efforts to reach out these drugs to leprosy patients. It is all very good. I myself am taking part in it, and I am very grateful for all those who help this effort, especially the British Leprosy Relief Association (I am glad Air Vice Marshall Crisham, the General Secretary of the BELRA is here), the Mission to Lepers, a very ancitent world-wide organisation, and the Order of Charity (I am glad also that there is here a representative of the Order of Charity). Many of these organisations are helping in India, Africa and many other countries to reach out the drug through ambulatory service. The Mission to Lepers are helping also those abandoned and deformed patients, but since their approach is a total approach and since they have got to look after research, treatment, control and several things, naturally in spite of their effort, there is a very large problem, of what is conveniently termed—it is not a very scientific term—of the burnt out leprosy case, that is to say those from whom the bacilli have been chased out by treatment, who are negative to bacteriological examination, in whom the disease has been burnt out, but who have deformities, disabilities, or social difficulties and have nowhere to go to.

The number of these people, especially in a country where leprosy has been long prevalent such as in India, Thailand, Africa, Burma, Korea, in several countries, is to-day really large. The usual view of the Leprologist and the Leprosy worker (I understand it, I have myself probably even been a party to resolution expressing such a view, in some conferences) the usual view is, we should concentrate all our energies on treating, on detecting cases, on controlling the disease. If there are people who have been cured who have become beggars, it is not a part of the leprosy problem, but it is a part of the beggar problem. Let us not be side-tracked,

let us have priorities. But we cannot wish away a problem by the mere thought that we have nothing to do with that. And so I am very grateful that Cheshire movement is taking a keen inteiest in this aspect of the leprosy problem. As I am sure many of you know, in India there already are two places where this aspect of the problem is being handed by the Cheshire Trust and the Mission for the relief of suffering. In Katpadi near Vellore, there is a Home for the burnt out cases. I am very proud about it and I am very grateful because of its situation in the midst of the town; because of the fact that the patients are not taken away to a remote corner, however well looked after, but that they are in the midst of the community that they can feel one of community and that they are enabled to lead as normal a life as possible. That seems to me serves a double purpose, the purpose of serving these very needy people whom probably we have abandoned in a very cheerful abandon because we think that it is too much, we thing that our money should be reserved for other things. I am not critical of that view as I said, I might sometime have taken that view but if there is some one who says, 'I'll be interested in it, I am not going to be distracted about your other aspects of leprosy, it comes into my life and I shall do it', I will say, 'Please do it' I may not be able to do much but I will stand with you.

In Raphæl in Dehra Dun a very different situation has been handled—a very difficult situation. In some parts of India there is more prejudice than in other parts. As you would expect about anything, the conditions vary. And there an ostracised community were living in the Dip and I remember the day when Group Captain Cheshire and I visited them and talked to them. The community had its own leadership, its own fine spirit and its joy we saw, and I remember well the thrill I got when I asked them to sing Gandhi's favourite song "Raghupati Raghava Raja Ram". Every one of them knew it. So they were not really beyond the community, they belonged to it spiritually in every way, they were keeping faith with the rest of them, only they

would not be accepted by the others. And the Group Captain and Sue Ryder have in Raphæl one institution for these, for their social and physical rehabilitation, and it is working very well.

People take phrases and cover themselves up under them. And my answer is 'Because you cannot do everything for everybody it does not mean that you should not do anything for anybody.' In Katpadi and Raphæl, you may not have solved this problem entirely but you have certainly demonstrated that it is solvable and one of my appeals to you is to help me to help you, if I may put it, in enlarging this endeavour in such a way that this problem of the unwanted people is solved so that they get a home, that they get comfort, that they get a feeling of being wanted and loved, that they are made to realise—as they realised in your other Homes and in Katpadi and Raphæl—that they can make their contribution to Society.

Another aspect of leprosy where I feel social workers could held, and Foundations like yours could help, is the uninfected children of leprosy patient. Here again we have got to be cautious that in handling this problem we do not create a new problem. In the past the way of handling the problem has been to take away these children from leprosy patients and put them in an annexe to the Leprosy Home, apart from other children, as if they had been diseased. They were not taken to the general orphanage, they were given a separate institution. No doubt it prevented them from infection, and they grew up in an annexe to the Home. Actually the Mission to Lepers themselves are now abandoning this policy because they feel that it brings in difficulties for the child later. It becomes a stigmatised child, the child itself feels that it is so different from other children and there is difficulty in shaping the future of the child so as to integrate the life of these children with the lives of other children. So we are now making resolute efforts to educate the social worker and to tell them that as long as an authority gives them

a medical certificate to say that the child is uninfected, you should consider the needy child and take it in your orphanage. Insist, if you must, on periodical examination, but do not refuse it. The response has been very encouraging and that is why I am on the whole against starting any preventories for healthy chilren's Homes. But still people are not convertible overnight, and time and again I have the problen which is most harassing, of the care of these children and of their education and so on.

Where for instance, Sue Ryder could help in this is in this way; you start a Home for children and quietly you admit these children also. Do not call it this Children's Home or that Children's Home—call it Children's Home, nobody will say anything. If we start it and begin to admit these children and other children also having in mind the particular need of these children. I think it will work wonderfully and you will show your way to others. And may I venture, Group Captain, to make one more suggestion which I won't press upon you too much at the moment. It seems to me that the person disabled in leprosy is just like any other disabled person when he is declared to have been rid of the disease. Now I can tell you of identical disabilities which may be caused by leprosy or by accident or by some other disease. By long neglect somebody has to undergo an amputation in leprosy for a leg. He is given an artificial leg, otherwise he looks exactly like the other fellow who might have lost his leg in a train accident or by some disease. I have often asked myself this question. if the prejudice against leprosy is solely due to deformity. But then the answer is not clear in my mind at all because I know that the identical deformity will be viewed differently when it is known that it is due to leprosy. If you did not say that it was due to leprosy it would be viewed better than when you say it was due to leprosy. So it seems to me that in a very wise, tactful, and constructive way, somewhere you could help in integrating the care of those disabled in leprosy, when they have been long negative and proved to be

negative, and when the care does not require any very special conditions, integrate them slowly with the care of other disabled people. This is what Dr. Brand is working for, and all of us are working for, and the International Association for the Disabled have also taken it up. I know that this cannot be done again overnight, and here again, I would suggest an expedient. Start something for those who have been healed but disabled by leprosy and then you will always have in a country like India people with disabilities caused by other conditions who cannot find accommodation in the other Homes. They will be willing to go to this Home—then lead them up and slowly people will get used to this idea; your committees will not be horrified: you public will not be horrified. I tell you, often when we blame the public, it is not the public. There is a hospital in Mysore, a Mission hospital where a British doctor does work, and magnificent work, for the rehabilitation and surgical care of leprosy patients. He just puts these cases alongside the othes—and in no special ward—one is here for apendicitis, another is here for something else, a third is here for a leprosy hand operation. I went to another big hospital in the same place and asked them why they did not do what the Holdsworth Memorial Hospital are doing. 'No, no, the public will object'. It is not the public it is we, it is the leadership, it is the medical profession, it is the social worker, it is you and I that have really to lead the way and to accept the challenge, and if you do that, I think that the public will be very tolerant and understanding and this has been my experience.

I would, at this stage, like to tell you how supremely Mahatma Gandhi was interested in this problem, because as you know politics was thrown on his shoulders by accident, and he was a politician not for the usual political purposes but because he sought Indian freedom for larger purposes. Political independence was for him only a means to larger things and he always remembered that unless the weak, the disabled, the under privileged come up, the nation has not really developed, and he made leprosy work one of the 18 important items

for national development and said in a little chapter, that he wrote in it on this problem " Generally the tall absorb all our attention. We are apt to forget the weaker people. So I put emphasis on this ". He also said . . . . . " I regard leprosy work as not merely a medical work but a spiritual work which transforms the frustration in life into the joy of dedicated service." And I have many incidents to recollect, but I shall not be long and will take only a few more minutes. I remember one or two incidents which showed this peculiar trait of the wise man and the seer in him. It was far away on a February morning in 1946 in the Nature Clinic in Poona. That very evening an Imperial visitor, His Highness the Aga Khan was to see him and there was much speculation in the Press about his coming. There were political controversies and pepole were asking, " Why does he visit Gandhi, will he put Gandhi into one of his most generous moods, and what would come of it?" and so on. At that moment I happened to be in Poona with him, and that very morning it was discovered that one of the servants of the Nature Cure Clinic poured hot water on his leg and did not know that he had suffered a burn. Now Gandhi knew all the signs and symptoms of leprosy and he knew that the man had leprosy. Now this was known. The Nature Cure Clinic was a place to which aristocrats went. So they wanted to send away this man the very next minute. Gandhi was in agony—he was writing in agony. I tell you. He called me and said, " Happily you are here. I can tell you. you see, people are so scared, so silly. Send him out? How can I send him out without making any reasonable arrangement about it? He is my typical poor man " and so on. Don't leave Poona until you have done something for him '. And as he was talking the thing that impressed me most was that for the moment that typical poor man—he was the world for him. He forgot everything else—the Imperial visitor, the political worries—nothing was there, and that was the wonderful trait about Gandhi that I have seen so often, that dedicated concentration attention to the needy and the poor, foregetting the rest of the world. I could

tell you many more incidents but I should not hold you, and that always reminds me of what the BAGHAVAT GITA says . . . .

"When the world goes to sleep the sage and the seer is awake. The sage and the seer goes to sleep when the world is awake."

The inner meaning of this passage is that the far-seeing sage does not pay attention to the things to which the world already pays attention. He knows he does not need to do it. But he pays attention to the things which the world tends to neglect. And I have here on my right and left two sages."

(With this last remark, Mr. Jagadisan graciously spread out his hands, pointing to Group Captain Cheshire on his right, and Mrs. Sue Ryder Cheshire on his left.)

Courtesy : " CHESHIRE SMILE " (*The Quarterly Magazine of the Cheshire Homes*).

Six types of Leprosy Cases

Dr. R. V. WARDEKAR, M.D.,
Director, Gandhi Memorial Leprosy Foundation, Wardha.

On the basis of clinical and bacteriological examinations leprosy can be classified into the following six types :—

(i) Indeterminate type.
(ii) Maculo-Anæsthetic type.
(iii) Tuberculoid type.
(iv) Lepromatous type.
(v) Borderline type.
(vi) Polyneuritic type.

The description of each of these types is given later but instead of adopting a text book method of description, each type is so described that the general medical practitioners may find it easy to understand the peculiar features of the type and also be able to differentiate it from the other type. Histological and immunological findings have been described only to help the general medical practitioners to understand where the type stands in the whole spectrum of evolution of leprosy.

It is desirable that before describing the details of each type a reference be made here to what are called " diagnostic criteria " for leprosy. This will enable the reader to judge while going through the description of each type as to which types satisfy the diagnostic criteria and which do not. The three diagnostic criteria are : —

(1) Loss of sensation (tactile, thermal or pain) in skin lesions and/or in periphery of limbs.

(2) Combination of thickened and tender cutaneous nerves and/or nerve trunks.

(3) Presence of leprosy bacilli in the skin lesions as examined by standard method of examination.

(i) *Indeterminate.*—This type represents an early phase in the evolution of the disease. But this is the only type which presents some difficulty in diagnosis because the only positive finding is the presence of hypopigmented flat patches will ill-defined margins. Though it is difficult to describe any further positive feature of these patches, the negative feature is that the Indeterminate patches are unlike Maculo-Anæsthetic and Lepromatous macules, i.e., the patch in Indeterminate type is neither dry nor shiny. Lepromin test may be negative. Bacteriologically it may be negative and there may be no analgesia or anaesthesia in the patches or in the limbs. The nerve also are not involved. Thus in this type none of the three cardinal diagnostic criteria of leprosy may be present.

As the society gets more and more leprosy-conscious, many patients with such early skin lesions are likely to present themselves to the general practitioner for examination. As a general rule, leprosy should not be diagnosed unless one of the cardinal diagnostic criteria is present. The general practioner should follow this rule in the beginning but gradually he should develop clinical acumen to diagnose even these early lesions. He can develop this by following up a few early cases and examining them once a month for a few months. He will observe that in some cases the lesions may clear up spontaneously, in some, the lesions may develop well-defined margins and also anaesthesia, while some may change on to the Lepromatous type. Having seen the progress of skin lesions in a number of cases he will be able to build up a mental picture even on the early lesions. He will then be able to diagnose the early lesions even when they do not satisfy any of the three diagnostic criteria.

Histologically, the Indeterminate type of case shows infiltration of round cells in the dermis with a tendency for their localisation around hair follicles, sebaceous glands and sweat glands. This picture suggests only an inflammatory process but there is nothing suggestive of leprosy in this picture. But when these sections are stained by acid fast

stain they show acid-fast bacili. The combination of inflammatory cells and acid-fast bacili proves these cases as those of leprosy.

As a general rule it is a good practice to find out the number of skin lesions. It is a mistake to miss even a single lesion case but it is a greater mistake to miss a case with many skin lesions because these are the cases which if not treated in time may develop into the Lepromatous type.

(ii) *Maculo-Anæsthetic*.—This type present flat hypopigmented patches. The number may vary from one to a few. The margins of the patch may be irregular but are well defined from the surrounding skin, i.e., one can clearly see where the patch ends and the normal skin begins. The surface of the patch is dry and anæsthetic. Occasionally, the nerve supplying the patch or other peripheral nerves may be involved leading to peripheral anæsthesia and deformities. Bacteriologically the lesions are generally negative.

Histologically the lesions, will show granulation tissue consisting of round cells and in some cases a few epithelioid cells, infiltration of finer nerve twigs and a few acid fast bacili.

A case may present a number of patches some of which may show well defined margins and anæsthesia and some may not. In other words, some patches may present the characteristics of the Maculo Anæsthetic type and some of the Indeterminate. In such cases, diagnosis should be based on well-developed lesions, i.e., the case should be labelled as Maculo-Anaesthetic.

(iii) *Tuberculoid*.—This type presents raised patches. Depending on the development the skin lesions are labelled as minor or major Tuberculoid.

The patches are raised either uniformly or only at the periphery. The surface of the patch is generally erythematous and dry. The margin is clear-cut even if slightly irregular. It ends abruptly, i.e., the border rises vertically from the surface of the skin. Sometimes the surface shows pebbling

Sensory changes are usually prominent except in lesions on the face. There may be loss of hair as well as sweat function in the patch. The cutaneous nerve twigs supplying the patch may be thickened and also tender.

Nerves are involved and often to a marked degree. They may become thickened and tender. Sometimes there may be a cold abscess in the nerve. Peripheral anaesthesia, deformities of hands and feet, ulcers, westing, paresis and paralysis of the small muscles, wrist drop, drop-foot, lagophthalmos, etc., may occur.

Bacteriologically the cases are generaly negative except during the phase of reaction. Lepromin test is usually strongly positive.

Histologically the dermis shows granulation tissue consisting of epithelioid cells; giant cells and round cells in varying proportions. Because of its resemblance to the histology of a tubercle, this type is called Tuberculoid. The sweat glands and sebaceous glands may be destroyed by the granulation tissue. Nerve twigs show massive invasion with the granulation tissue.

A case presenting some patches of Tuberculoid type and some of Maculo-Anaesthetic type should be labelled as Tuberculoid type.

(iv) *Lepromatous.*—This is a severe type of disease widely involving skin, mucosa, nerves, lymph nodes, eyes and some other internal organs. The skin shows one or more of the following varieties of lesions :—

(*a*) Diffuse infiltration;
(*b*) Flat macules;
(*c*) Raised patches; and
(*d*) Nodules.

A case may show only one of the above lesions or may show more than one. For example there may be a case which may show only diffuse infiltration of skin but no flat macules or raised patches, while another case may show flat macules,

raised patches and also nodules. The *description of the four* varieties of lesions is given below with a view to recognising the Lepromatous type of leprosy but while labelling a case one may not necessarily qualify it as macular or nodular type of lepromatous leprosy.

(*a*) *Diffuse infiltration.*—The earliest evidence of diffuse infiltration is a slight change in the texture and colour of the skin which may be missed in dark skinned people if not carefully looked for. This is better *seen* on ears and face. As infiltration progresses the skin shows thickening which is best felt by comparing the thickness of the skin in the suspected areas and the surounding normal looking skin by lightly pinching the skin between two fingers. The infiltrated areas look velvetty and shining.

(*b*) *Flat macules.*—The earliest evidence of macules is *mottling of the skin better seen on the back by slightly tilting* the patient to one or the other side. Later when the disease progresses, obvious macules are seen. These are generally on multiple and distributed on both sides of the affected part. Margins are ill-defined merging imperceptibly with the surrounding skin. Surface of the maclues is shiny and velvetty. There is generally no loss of sensation in early macules. The macules may gradually increase in size and coalesc with others.

(*c*) *Raised patches.*—They are multiple, raised and erythematous. Margins, however, are not so distinct as in the Tuberculoid type and slope towards periphery. The patches vary markedly in size. They are soft and the surface is not dry as in the Tuberculoid type. Anaesthesia may not be so pronounced as in the Tuberculoid type. The cutaneous nerve may or may not be thickened or tender.

(*d*) *Nodules.*—The nodules vary markedly in size and may be associated with one or the other type of skin lesions described above. The nodules are seen most *commonly* on face, ears, elbows and knees, etc.

The other common features in well-developed Lepromatous type of leprosy are thickening of the earlobes depressed nose, loss of hair in the outer third of eybrow and beard, involvement of eyes, etc. Some cases may show gynaccomastia.

Nerves are involved relatively late and usually to a less extent than in the Tuberculoid type. Deformities in hands and feet are seen as in the Tuberculoid type.

Bacteriologically lepromatous cases are positive right from the early stage. As the disease progresses bacteriological smears show increasing number of bacilli. Lepromin test is negative.

Histologically the Lepromatous type is characterised by sheets of granulation tissue consisting of foamy cells. These cells are also known as " 'lepra-cells " and hence the name Lepromatous type. Sections show a arge number of bacilli.

(v) *Borderline.*—This type shows raised multiple patches which simulate lepromatous patches in some respects and tuberculoid in others. The margins are softer than in Tuberculoid type and may not be so sharply demarcated. But in contrast to the Tuberculoid type, the Borderline cases are always bacteriologically moderately positive, and lepromin test is negative or weakly positie.

(vi) *Polyneuritic.*—This type shows involvement only of the nerves and not of the skin. Only neuritic signs are seen but no skin patches. Primary neuritic are those in which skin lesions did appear but at the time the case presents for examination, no evidence of skin involvement is seen. The neuritic signs are the same as seen in Tuberculoid or Maculo-Anaesthetic type. Thus there is peripheral anaesthesia, wasting, paresis and paralysis of small muscles with consequent deformities and ulcers.

Bacteriologically the skin smears are negative but bacilli may be present in the affected nerves. Lepromin test may be positive or negative.

Histologically the nerves may show Tuberculoid or Lepromatous type of changes.

Those who find it difficult to remember the above six types of cases will find the following method useful.

First, fix your attention on Tuberculoid and Lepromatous types which are polar forms and quite easy to understand and also remember.

Once conversant with these two types, remember that these are well developed forms of a disease, which runs a very slow course. Moreover since the pathological changes are taking place in the demis, they are bound to be reflected from the early stages on the surface of the skin by changing its normal appearance. Thus long before the granulation tissue takes up the typical characteristics either of Tuberculoid or Lepromatous type, the skin lesion will appear, which will differ from the tuberculoid or lepromatous skin lesions: These early skin lesions are what are called Indeterminate and Maculo-Anaesthetic type of lesions. These two words also are very suggestive and give a hint about the nature of the lesion. " Indeterminate " conveys the meaning that though it is a case of leprosy it has not yet taken up the characteristics either of Lepromatous type or of the Tuberculoid type, which are the two determinate types. " Maculo-Anaesthetic " indicates that it is a macule (i.e., not a raised lesion) and is anaesthetic.

Then turn again to Tuberculoid and Depromatous types which show purely one or the other extreme tissue reaction. But remember that in nature one does not always get pure reactions—in some instances at least, there is an overlapping of the two polar tissue reactions. In these one finds elements of Tuberculoid type and also of Lepromatous type. This is the Borderline type.

Then only the last type, viz., Polyneuritic remains. In the above five types, the skin and also the nerves are involved but it is quite possible that in some cases only nerves will be involved—this is the Polyneuritic type.

[*An extract from the book " Hints on Diagnosis and Treatment of Leprosy ".*]

Wallajah Scheme

DR J. C. SAVARIRAYAN, B.A., M.B.B.S.,
Honorary Director, Wallajah Leprosy Relief and Control Scheme.

[*Review of Five Years of work of the Leprosy Relief and Control Scheme for Wallajah taluk, Scudder Memorial Hospital, Ranipet.*]

In August 1964, we completed five years of working of this scheme. As now everybody knows, the scheme was launched as a bold experiment in integration of leprosy into the basic services. In August 1959, the scheme was started to control and treat leprosy in an area of fairly high incidence and with a total population of 3¼ lakhs, calling on the services of doctors doing general medical work in Government Primary Centres, Municipal and Local Fund dispensaries and personnel in a Mission Hospital—which serves as the headquarters for the whole scheme. The originators of the Wallajah Scheme must be credited with vision and faith when they suggested and initiated the scheme with no precedent of such an undertaking elsewhere in this country. Their idea was one of mass treatment to tackle the enormous problem of leprosy in the Wallajah taluk, drawing on the experience of Dr. F. Hemerijckx in mass treatment in Central Africa. Dr. Hemerijckx emphasised the concept of (1) utilising the services of all doctors scattered in the various clinics in the taluk, (2) the necessity of domicilliary treatment to avoid long distant walks and loss of work hours for patients, (3) that leprosy should be viewed as one of other diseases like Malaria, dysentery, etc. The past attitude of relegating the disease as a special entity to be treated only by leprologists has resulted in neglect and lack of early treatment with all the dire stigma attaching to leprosy. This is the special feature of the Wallajah Leprosy Scheme that it is an integrated scheme, the integration comprising all doctors in the

area, calling for an integrated outlook towards the disease as coming in under the common purview of general diseases. Such a view may have its critics, but we feel this sort of an approach is the only way to tackle the enormous problem in South India. We are not glossing over the defects in a scheme like this. Most of the doctors in the various Government and Municipal dispensaries are junior doctors who have to learn about leprosy while they are treating it. In addition these personnel are frequently changed due to transfers. All these handicaps were foreseen from the start. In spite of our lack of expert knowledge, no ill-results had happened. Obviously, the Wallajah Scheme should not be measured with the same yard stick as would be done with centres like Polambakkam and Tirukoilur.

Measuring the angle of contraction of fingers of Leprosy patient, at S.M. Hospital, Ranipet.

After five years of working of this scheme, in spite of all the defects, the scheme has justified itself by results, statistics are given in the Annexures, though the important thing is not just the figures, but the general evidence we see of the benefits of the working of the scheme are (1) the large number of

leprosy patients seeking and obtaining treatment, (2) the improvement in the social and psychological outlook towards the disease, (3) the awakening of the conscience of the doctors towards the leprosy victims, (4) the gratifying disappearance of macules in young people and the possible arrest of further development of the disease in them.

The Organisation of the Wallajah Leprosy Scheme

The Wallajah Scheme consists of 16 sub-centres; these sub-centres being located chiefly at the already existing medical centres, the Scudder Memorial Hospital at Ranipet, serving as the headquarter. Of these sub-centres, three are Rural Dispensaries, (Ponnai, Thimiri and Kalavai) one Local Fund Dispensary (Melvisharam), one Municipal Dispensary (Arcot), one Primary Health Centre (Lalapet) and two Government hospitals (Wallajapet and Sholinghur). Work in the rest of the sub-centres which have no medical dispensaries is taken care of by the mobile unit of the Scudder Memorial Hospital.

Physitherapist taking assessment of deformities.

The Director of the Wallajah Leprosy Scheme is in charge of five sub-centres, the Medical Officer at Lalapet, who is provided with a jeep, is in charge of four other sub-centres in adition to Lalapet.

Doctor assessing the deformities and contractions

Para-Medical Workers

The Para-Medical Workers, as everbody knows, form the pivot of the Leprosy Control Scheme. Each sub-centre is provided with a para-medical worker. There is no need to elaborate on their functions which are the same as in any other Leprosy Scheme. As the sub-centres are distributed very unequally, some having comparatively larger population than others, some more spreading areas than others, it is understood the burdens are not equally shared, some para-medical worker having to do much heavier work than others. The Government gave us the liberty to train our own workers, among them are S.S.L.C. both passed and failed. By and large we have found most of them dependable. About 80 per cent of their findings are correct in regard to their findings and classification. In the last five years they have conducted two surveys. Their

remuneration is below, that of similar workers in other Government Leprosy Centres. Being quite new and raw to their work in the beginning, these para-medical workers had to learn and master the various responsibilities only gradually. First, treatment was emphasised and only later survey, contact finding etc., was taken in their stride. There is one Physiotherapist and one Laboratory Technician.

Monthly meetings

The monthly meetings are held, generally on a day in the first week of each month, at which the whole staff-doctors, para-medical workers are present and the District Medical Officer, North Arcot, is always invited to the meeting. It is gratifying to mention that all the three District Medical Officers we had in the past five years have been very regular in attending these meetings and have taken keen interest in the discussions. At these meetings statistical figures are examined, registers, scrutinised and complaint enquired into, activities and methods are discussed. Supplies like bandages, medicines are given. Personal contacts are maintained. At some meetings specialists from Karigiri come and give talks on leprosy. The State Leprosy Officer has met with us a number of times and given valuable information and encouragement, in addition to examining our records. Mr. T. N. Jagadisan has frequently met us at these meetings and infused us with his enthusiasm.

In patient treatment

There is leprosy in-patient department at the Headquarters —Scudder Memorial Hospital, with a provision of 2 beds for men and 12 beds for women. The wards are always full. We used to take in acute cases like lepra reactions, bad trophic ulcers, Iritis cases and active pulmonary tuberculosis. But ever since the plastic operation programme was started, we have been admitting these cases also utilising the floor space also.

Therapy

The basic treatment of course is with the Sulphones. We usually begin with small dosages and build up to maximum dosage during a period of six months. Due to this reason,

cases of intolerance to the drug have been very few. Those who have shown intolerance have been shifted to Thiosemi-Carbazone and Ciba 1906 (The Ciba Company has been kind enough to supply this drug free).

Rehabilitation and Physiotherapy

Though we were not expected to undertake the plastic operation programme, the Karigiri staff took interest in our leprosy programme and their surgeons, Dr. J. R. Harris first and then Dr. William Lennox started doing Dr. Brand's type of operation on suitable cases and trained one of our own staff Dr. Frank L. Zwemer, who has now mastered the technique and is doing these operations.

We have also a competent physiotherapist who follows up these operated cases. Wax therapy is routine procedure for all those who need it.

In conclusion, to summarise the results : (1) whereas number of leprosy patients receiving treatment before 1959 was only about 500 in the whole Taluk, but now after years of starting and working the scheme nearly about 10,000 cases are receiving regular treatment. This speaks for itself. (2) Acute cases formerly neglected and uncared for, are receiving in-patient treatment. Deformity cases are being rehabilitated by operation and physiotherapy. (3) Infectivity is markedly controlled by mass treatment, (4) General doctors formerly apathetic towards leprosy now show awakening and concern towards leprosy.

We would like to record our appreciation to the originators of the Scheme–(1) Sri M. A. Manickavelu, the then Minister for health, Government of Madras, (2) Dr. V. R. Thayumanaswamy, the then Director of Medical Services, Madras State, Sri T. N. Jagadisan, Hon. Secretary, Hind Kusht Nivaran Sangh, Madras State Branch, Dr. F. Hemerijckx, Dr. M. Narayanan, the then District Medical Officer of North Arcot, Vellore, and Dr. V. Ekambaram, State Leprosy Officer, Madras.

ANNEXURE-I

LEPROSY RELIEF AND CONTROL SCHEME FOR WALLAJAH TALUK, RANIPET, NORTH ARCOT.

1. **Area** :—Wallajah Taluk. (395·07 sq. miles).

Population: 3,36,308 (According to 1951 census).

	N.	L.	NL.	Total.
2. Total number of cases registered till the end of November, 1964 ..	11,605	2,836	928	15,269

(Male : 6,750 ; Female : 3,726 ; MC : 2,996 ; FC : 1,797).

Number discharged : 432.

Number discharged but taking maintenance dose : 407.

Clinics held once a week or fortnight.

3. Healthy contacts : 42,651.

Number actually developed symptoms : 1,069.

4. In-patient ward : 36 (beds always full).

RECONSTRUCTIVE SURGERY

From July 1963 *to November* 1964.

(Hand)	EF4T	40
(Foor drop)	TPT	12
(Thumb)	OPPONENS	11
(Thumb)	FLEXOR POLLICIS LONGUS ..	3
(Eye)	TEMPORALIS TRANSFER	14
(Cataract)	REMOVAL	3
	TRANSPOSITION AND DECOMPRESSION OF ULNAR NERVE	2

ULNAR DISTRIBUTION (Island peducle transfer)	1
TORSORRAPHY	3
ADDUCTOR REPLACEMENT ..	3
ORTHRO DISA SE (Triple)	2
SUBLIMIS TRANSFER	3
SKIN GRAFT	2
CORRECTION OF WRIST DROP ..	2
Total ..	101

EXPENDITURE

The cost of running the Scheme (Pay and Allowances of Establishment, cost of drugs, maintenance of In-patient wards, Welfare Activities, other Hospital necessaries etc.)

1963–64 ... .. — Rs. 1,11,422-66 P.

ANNEXURE-II.

LEPROSY RELIEF AND CONTROL SCHEME FOR WALLAJAH TALUK, RANIPET, NORTH ARCOT DISTRICT.

STATISTICAL REPORT AS IT STOOD ON 30TH NOVEMBER, 1964.

Serial number.	Name of the centres.	1951 Census population.	Number of villages with Hamlets.	Registered cases. N.	L.	N.L.	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Jambukulam ..	17,057	11/42	910	149	48	1,107
2.	Velam	18,868	11/42	871	151	45	1,067
3.	Sengadu	13,608	8/11	514	112	71	697
4.	Chennasamudram	12,526	9/7	585	125	87	797
5.	Wallajapet ..	21,362	4/11	864	124	130	1,118
6.	Sholinghur ..	15,683	3/12	875	181	17	1,073
7.	Lalapet	8,822	6/8	536	124	13	673
8.	Kavanur	14,194	10/16	756	83	7	846
9.	Chakkaramallur..	13,602	4/14	374	78	4	456
10.	Mambakkam ..	17,561	4/13	689	106	64	859
11.	Ponnai	12,223	3/11	455	95	14	564
12.	Arcot	36,935	8/13	906	133	48	1,087
13.	Thimiri	35,140	21/16	1,013	108	94	1,215
14.	Kalavai	30,394	10/22	659	181	93	933
15.	Visharam ..	33,321	10/20	673	239	57	969
16.	Kumananthangal.	8,082	5/9	219	26	5	250
17.	Ranipet	26,930	9/11	1,059	368	131	1,558
	Total ..	3,36.308	136/278	11,769	2,383	928	15,26

Leprosy Control in South Arcot District

DR. P. VAIDYANATHAN,
Honorary Secretary, Hind Kusht Nivaran Sangh,
SOUTH ARCOT DISTRICT.

The subject is a vast one, but I shall endeavour to present as briefly as possible some relevant information on the subject.

Leprosy control means, Leprosy relief and control as they both go together. It means, giving relief to sufferers from Leprosy and also checking the spread of the disease. The recognised modern method of controlling the disease is based on the three principles. That is Survey, Education and Treatment.

Survey :—The object of the Survey is to find out accurately the incidence in a particular area, by examination of the entire population and to study the various environmental factors responsible for the spread of the disease in that area. A survey is very essential, not only for setting up treatment Centres at the required places, but also to assess periodically the results of treatment.

Education :—Coming to Education, the insidious infiltration of leprosy amongst the public of all strata of society, indicates the need to acquaint the public with pertinent facts about the disease. There is still among the public a lot of prejudice against the sufferers from leprosy, mainly due to their ignorance of the real facts concerning the disease. As long as the leprosy patient is considered as an outcast and shunned by the public, so long the leprosy patient will certainly hide his condition

and escape detection. Therefore, a change in the attitude of the public should be brought about. Side by side there is also ignorance, apathy, and carless neglect by the patients. These have also to be combated.

How could they be done? Vigorous education campaign should be carried out by all the agencies that are engaged in doing anti-leprosy work, particularly in the villages, by means of suitable posters, pamphlets in local languages and audio-visual aids like films on the following points. What is leprosy. What does leprosy look like in the early stages—How the infection is conveyed—Who are most susceptible to infection—is leprosy heriditary—*Is leprosy curable.*

Treatment.—Leprosy is one of the oldest diseases of man kind which had baffled the medical men for centuries. No satisfactory method of treatment was evolved till recently, a few decades ago. With the discovery of Sulphones, the greatest revolution has come about in the treatment of leprosy. We have now an affective remedy for the disease. Drugs are available, which if taken regularly over a period of several years, will completely arrest and in many cases cure the infection. This drug should be taken to every sufferer and they should be persuaded to take it.

In short, the above are the measurers, which when carried out, would be very effective in controlling leprosy. Now I shall mention the extent to which the above measurers are practised in South Arcot District.

Survey, which is an important factor in the control of leprosy, has yet to be carried out satisfactorily, through out the district. To my knowledge, the first survey in our district was in the early thirties under the auspices of the British Empire Leprosy Relief Association. Subsequent to this, it was only in the year 1947–48 that the Kasthurba Gandhi, Kusht Nivaran Nilayam, Malavanthangal, Gingee

Taluk, which was started in 1946, started survey work in and around Malayanthangal. About the year 1950, Thakkar Bapa Khusht Nivaran Sangh, Tirukoilur, started survey work in selected areas around Tirukoilur.

It was in the year 1953, that the State Government appointed a State Leprosy Survey Unit, under a Health Officer. This Unit carried out surveys in South Arcot District revealing the high incidence of the disease. With the opening of the Government Leprosy Treatment and Study Centre at Tirukoilur in 1955, some more endemic areas were surveyed in that taluk. After sometime the Leprosy Subsidiary Centres were opened at Veeraperumanallur and Vridhachalam and survey work was carried out in and around the respective centres.

In recent years, the Leprosy Centre at Polambakkam, which has by now extended their activities in South Arcot District, the Mission to Lepers, Vadathorasalur and lastly, the Jothi Nilayam Centre at Muttathur, are also doing Survey work in and around their places.

To sum up, Survey in South Arcot has been and is being carried out in patches here and there.

Regarding education of the public about leprosy, the State Government are issuing now and again pamphlets and posters about Leprosy. During the last decade such work has been done in this direction by the State Branch and District Branch of the Hind Kusht Nivaran Sangh. Publicity programmes have been carried out by Film Shows at many places, Exhibitions conducted, posters displayed, pamphlets issued and many public meetings arranged where broad facts about leprosy have been brought home to the public.

Coming to treatment as a measure of control, the only known method of control, was segregation and institutional treatment, the routine treatment then being with Hydnocarpus Oil. The first institution to do this work in this district is the Mission to Lepers, at Vadathorasalur for the year 1925.

It was only in the year 1930, the State Government realising the need for giving treatment to as many patients as possible, by opening leprosy out-patient clinics, ordered that leprosy treatment should be a part of the routine work of all the medical institutions in the State.

In the year 1933, Mrs. Todd, who organised successfully a leprosy relief campaign at Salem, was authorised by the State Government to carry on a Campaign against Leprosy throughout the State. On July 1933, the Campaign was inaugurated at Cuddalore. As a result of the Campaign model leprosy out-patient clinics were opened throughout the district and every clinic was supplied with necessary drugs and equipment. So it is, that in every hospital and dispensary in the district, the so called leprosy sheds came into existence. Unfortunately the enthusiasm was not sustained especially in the context of the poor result of Hydnocarpus Therapy.

The South Arcot District branch at Hind Kusht Nivaran Sangh, since its inception, is carrying out its share of leprosy control and relief work in the district. With the co-operation of the then Local Bodies and the present Panchayat Unions and the District Medical Officer, the services of all the Medical Officers, of the Local Fund Dispensaries and Rural Dispensaries are utilised to run leprosy out-patient clinics in the respective places. Necessary sulphone drugs are supplied by the Sangh. The Medical Officers were given a short period of training in leprosy work. This system, in fact, is akin to the 'Wallajah Scheme' which come into existence recently.

About the year 1950, besides the Government Institutions, various private organisations in the district engaged in anti-leprosy work, started conducting out-patient clinics in many areas thus enabling more patients to take treatment. They are, Kasthurba Kusht Nivaran Nilayam, Malavanthangal, Thakkar Bapa Kushta Nivaran Sangh, The South Arcot District Branch of the Hind Kusht Nivaran Sangh, Mission to Lepers, Vadathorasalur, The Belgian Leprosy Centre, Polambakkam, The German Leprosy Centre, Chetput, and the Jothi Nilayam Centre, Muttathur.

There were no facilities for in-patient treatment in the whole district except the one at Vadathorasalur. It was only in 1948, the Kasthurba Gandhi Kusht Nivaran Nilayam opened wards for women patients only. This institution now has wards for men also.

After the attainment of Independence and during the terminal two years of the First Five-Year Plan, Leprosy Control was also included among the many National Programmes. The Government of India, in collaboration with the State Governments, initiated the Leprosy Control Scheme. As a result of which a treatment and Study Centre was started at Tirukoilur with provision for in-patient treatment also. Jothi Nilayam Centre is putting up a ward of ten beds.

Although there are so many agencies in the district engaged in Leprosy Control Work, the fact that the disease is highly endemic, calls for further concentrated work.

It may not be out of place to mention here something about Rehabilitation of Leprosy patients. Rehabilitation means the restoration of the handicapped to the fullest physical, mental, social, vocational and economic usefulness of which they are capable.

With the advent of Sulphones, it has given a new hope and new life to victims of leprosy. In the early stages of leprosy there is no or very little deformity and that is the

time when Rehabilitation measures of preventing deformity and reconstructive surgery should be thought to. In fact Rehabilitation should start when the diagnosis is made and continued till the patient once again returns to normal life in the community. Thanks to Dr. Paul W. Brand, the father of reconstructive surgery for leprosy patients, who has given a lead in correcting deformities, thereby giving a new look to patients giving them useful hands and feet and also making it easier for them to be accepted back into society.

The South Arcot District Branch of the Hind Kusht Nivaran Sangh is running, since 1959 a Rehabilitation Centre at Seplanatham, near Neyveli, where handicapped persons recovered from leprosy are trained in gainful occupations and after the training, employed, thereby enabling them to earn their own livelihood. At present there are 30 handicapped persons at the Centre. They earn monthly from Rs. 45 to Rs. 75 each. Socks and Stockings are manufactured with hand-knitting machines which are sold in the open market. It is in the programme of the District Branch to start many other Cottage Industries and thus be in a position to rehabilitate more handicapped persons.

In conclusion, I wish to state that the most essential requisites for success in leprosy control programmes today are public understanding and co-operation. The Government and Voluntary agencies are putting forth more and more effort to treat and control leprosy. But unless, the public shed their apathy and bring a more hopeful outlook to the problem, the progress will be slow. They must, in fact, bring a sense of urgency to their approach and help the patients to profit fully by the facilities that are made available to them.

Fight Against Leprosy !

DR. P. GURUSWAMY,
*Medical Superintendent, Kasturba Kusht Nivaran Nilayam,
Malavanthangal,
South Arcot District.*

Leprosy is a very ancient disease which has been prevalent in the tropical and sub-tropical countries of the world. Though non-fatal and slow spreading it is dreaded for the disfigurement and deformity it causes to the victim. In olden days no specific remedies for the diseases were known and a crude method of isolating the patient was practised. But with the advent of sulphones there are high hopes of arresting, curing and preventing the disease, for which purpose a thorough knowledge of the disease should be made available to the patients and the public alike. An no time should be lost in this direction.

Peculiarly, the stigma and prejudice against this disease is deep rooted due to false notions and wrong beliefs and so patients are not available for examination, early diagnosis and treatment which can prevent disfigurement and deformities. This is essential to demonstrate that this disease is also like any other disease, curable at its earliest stage.

There are two broad types of this disease, namely, the lepromatous (or open) and the non-lepromatous (or closed). They start with obvious signs like thickening of the skin or discoloured anæsthetic patches thereon which are the warning signs for starting immediate treatment. The polyneuritic (a sub-division of the closed type) is something where the symptoms are more subjective than otherwise. The patient feels the anæsthesia slowly and in the absence of any visible signs, ignores it and comes under notice only when traumatice

ulcers of deformities ensue. But if a knowledge of the disease becomes universal anyone will come under observation at an early date, on the onset of the slightest anaesthesia. As this disease starts with no ache, pain or fever—the usual signs of the onset of other diseases—the patient is unaware that anything is seriously wrong with him and goes about his work without a thought about his health.

There are about thirty lakhs of known leprosy cases in India and about eight lakhs in Madras State alone. The huge figure of known and unknown cases is a counrty wide health problem which is to be tackled in the correct perspective.

"Prevention is better than cure" is an adage which is most applicable to this disease rather than to any other. For the other infectious diseases like cholera, plague and smallpox, if untreated, will the patient outright and leave nothing of him behind as a drag on society. But this disease is different, it does not kill him but cripples him for life and leaves him a drag on society—though much is done to salvage some useful members out of the wreck by re-constructive surgery and rehabilitation work. At least a small percentage are fitted for light work.

If old age pension is justifiable for the inabiliy of old people to work the same should be applicable to the crippled due to the deformities of this disease and that will cost a good bit to the State. In the pursuit of curing and eradicating diseases like tuberculosis and malaria, and smallpox huge sums of money are spent on a national scale. Of course there are protective inoculations and destruction of vectors like the mosquitoes in the case of these diseases. But these measures are not available for the control and eradication of leprosy and we are obliged to fall back on survey, education and treatment only for its control and eradication.

Government and private ladies have selected highly endemic areas for setting up S.E.T. Centres, i.e., Survey, Education and Treatment Centres. Their experience shows

that there are difficulties in working out these details to perfection. For instance, for survey work even in endemic areas the co-operation and response from the public are only half-hearted, i.e., the healthy population who are without blemish do not hesitate to be surveyed (i.e., examined). The trouble is only with the 'suspected' people who do not want to know and do not want to be known that there is anything wrong with them—lest they be looked down upon by others as cases of leprosy. The fear of ostranism is so great. And so, so long as survey remains only 'Voluntary', the field worker is unable to cover the entire field. Some legislation making it obligatory for every one in an endemic area to be 'surveyed' may help to bring to the surface hidden cases of leprosy which is a vital point in the eradication of the disease.

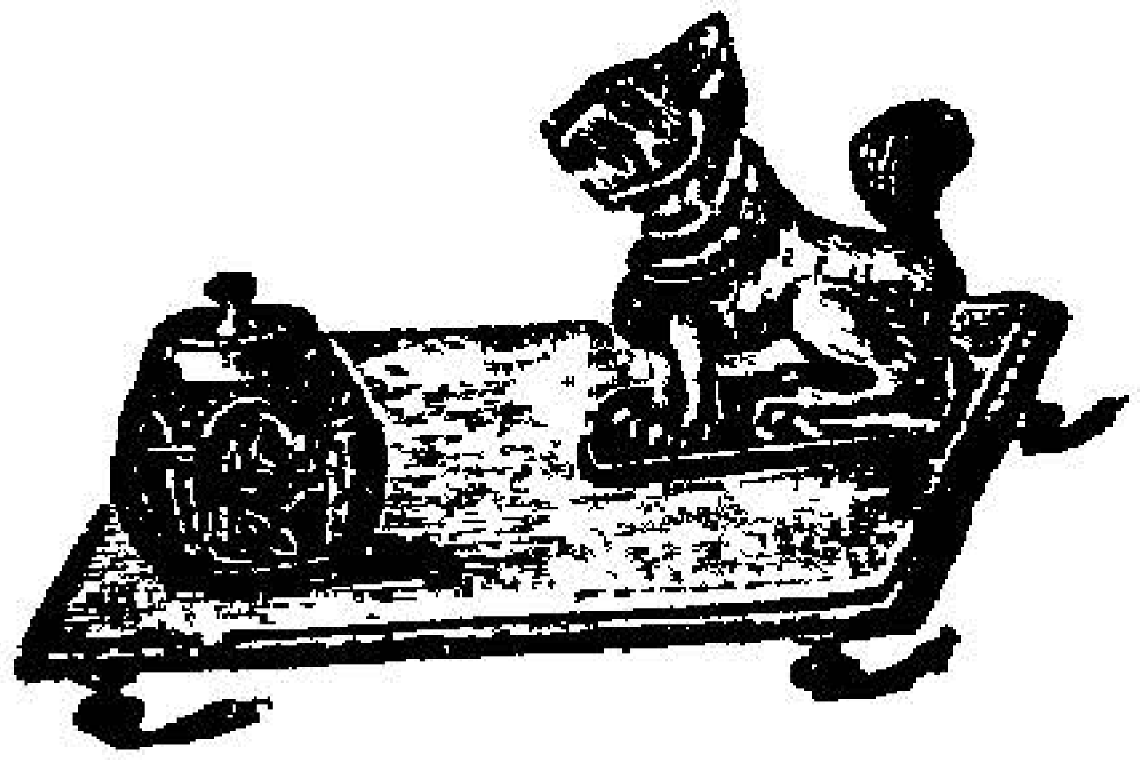
Isolation, disinfection and protective inoculations are easily made compulsory in cases of infectious diseases like cholera, plauge, smallpox, etc. In like manner, this disease also may be made notifiable at least for purposes of survey, early diagnosis and treatment in endemic areas to begin with. If undetected and untreated early, there is no limit to the perpetuation of the disease.

On the educative side much is being done by way of pamphlets, leaflets, posters, cinema-slides and talkies which have not yet reached the popular to the desired extent and produced appreciable results. The importance of removing susceptible children from infectious cases is stressed and understood but practised only partially. Publicity must perhaps reach the level of fire-fighting in which case any man in the street rushes to the rescue to quench the fire and save life and property. Leprosy fighting is no less important as it is a slow fire indeed. It requires only human intelligence to spot the disease and do the needful with sympathetic understanding. Lack of trained field workers is a standing handicap. But in cases of emergencies any organized people could fulfil the purpose with a little training. In the present

food crisis even the home guards are mobilised to distribute ration cards which is the first step in tiding over the difficulty. The same home guards with a little training could help to fight this disease. A knowledge of the disease in all its essentials must find a place in school text-books examinations and interviews.

Government is sending monthly batches of teachers, Grama Sevaks, Village Officers and others for a three-day camp to the leprosy centres to know the rudiments of the disease and how best to combat it at an early date. It is expected that they will do much to remove the fear of leprosy and the ostericism attached to it.

On the treatment side, sulphone tablets and injections have come as effective drugs in arresting, curing and rendering patients non-infective for eradicating the disease, close and intelligent to co-operation of the population is needed and will soon be got let us hope.



The Problem of Leprosy

Dr. P. A. S. RAGHAVAN, Z.M.R.E. (Vienna).
Tiruchirappalli.

It is now established, beyond doubt, that leprosy is one of the least infective of infective diseases. Only about 20 per cent of the patients suffer from the infective type and they can infect mainly children by long and intimate contact. In spite of it, that the disease has persisted in various parts of the world for centuries is due to the fact that till now there has been no specific against the disease and prevention of the disease is difficult.

Now with the discovery of Sulphones and that it is very useful, if not a specific, against leprosy, has given us the hope that the disease can be eradicated altogether. But the fact that Sulphones are not tolerated in some cases, and even when tolerated, it takes a year or two, make an infective into a non-infective one, is a great handicap, and coupled with the fact that the general opinion is that Leprosy is incurable. The fight against the disease and its eradication is a difficult job.

Science is advancing rapidly in all directions, including medicine, that one will not be surprised that a specific drug against leprosy is discovered in the near future, which will cure the disease by an injection or two or medication for a month or two, just as Anti-biotics cure many venereal and other diseases rapidly. A drug also may be discovered which will act as a preventive of the disease. Even then the task of eradication if a big problem, just as in the case of diseases where there are specific cures and preventive medicines. We, doctors and Leprosy Workers cannot sit with folded hands till the discovery of such drugs of cure and prevention,

as we have not been so till now, but should intensify our activities, fight the disease with the armaments we now possess and educate the public about the nature of the disease, about its low infectivity and easy cure in the early stages even now.

Apart from the medical aspect of the disease, the social aspect stares us in the face. We have to educate the public to treat Leprosy patients, however hideous they may look in some cases, as human beings. Patients from leprosy suffer from the disease not due to any fault or crime they have committed in their life. If according to Hindu concept, it is due to their past Karma, God has inflicted the suffering and we, human beings should not add to their sufferings. However if we relieve their suffering in ever a small measure we would have justified our existence in this world as human beings. So, not only should we do our utmost to relieve their suffering, but also educate the public to do like-wise.

All can help the cause of leprosy in various ways. The rich can donate liberally to organisations doing leprosy work. The middle class people also can donate whatever they can in cash and kind. Doctors should treat leprosy patients free even in their private clinics. Surgeons should do as much corrective surgery as possible to restore handicapped to lead useful and independent living. Religious Endowments should contribute liberally for the relief of leprosy, as they have now started helping educational Institutions. As temples elevate the soul, their funds should relief physical suffering.

A Major National Problem

R. VARADA TATACHARI,
Secretary, Hind Kusht Nivaran Sangh,
KANCHEEPURAM.

Leprosy has become a major national problem of public health in the present day conditions of our country. Thanks to the advent of Sulphones it has become now possible not only to prevent but also arrest and cure the disease in a fairly widespread manner.

Chingleput District, next only to South Arcot is an endemic area having about 2 per cent incidence. As is common everywhere the incidence of non-infective cases are more in Chingleput district. Calculated roughly the infective lepromatus cases will be about 25 per cent.

The Hindu Kusht Nivaran Sangh, Chingleput District Branch has undertaken " Survey and Domiciliary Treatment of Leprosy " work sponsored by the Government of India, under its National Leprosy Control Scheme through its Kancheepuram Branch for the last two years. The Government Control Unit which is recently established at Kancheepuram has also taken up the work uncovered by during Survey and Domiciliary Treatment in the District, the Hind Kusht Nivaran Sangh. Seventyone villages consisting about 52 thousand population are taken up by the Hind Kusht Nivaran Sangh, Kancheepuram Branch. The Survey is almost complete and domiciliary treatment to the leprosy patients is given in 9 different clinics in its area. Only D.D.S. are given to these patients apart from some ancilliary drugs like vitamin 'B' complex. Dressing materials are also supplied to those who are in dire need of it in these clinics. About 900 patients are treated like that. The percentage of

attendance is about 65 per cent. Among the surveyed population of 50,000, about 47,000 persons were actually examined by our Medical Officer and Para Medical workers so far. The remaining will be completed in the course of a month or two. We were able to cure completely about 80 per cent of patients and the remaining to a fairly appreciable extent.

A perceptible feature of the outlook of this problem is that now-a-days, patients are more freely coming forward for treatment in early stages itself, than before. Thanks to the propaganda and education of the facts about leprosy carried out ceaselessly by our Sangh and other agencies in this field, people have now realised that the disease is not so infective and they have also by experience found that the disease is curable. The disease can be controlled and also be eradicated very soon if all the agencies seized with the problem including the Government and the public continue to exert their efforts ad co-operate with one another in the same way as they are doing it now.

Education as a way of Leprosy Rehabilitation

MISS H. JOHANSEN, S.R.N. S.C.M., S.T.,
Nursing Superintendent, Vedathorasaulr Leprosy Home
SOUTH ARCOT DISTRICT.

Education of *Leprosy patients* is invaluable as a way of rehabilitation. But in our school mission of Lepers which is recognised by the Government, we have only five standards. This means, that when being discharged as cured, the children will not be able to be admitted for any training or higher studies.

We have applied the *school authorities* to get permission to raise the classes up to 6th and gradually up to 8th standard. But this does not seem possible, because we don't have the recognised number of children for each standard and therefore we cannot neither appoint more teachers.

It is most necessary, that an exemption rule could be made for schools with leprosy children only, so that it will be possible to raise the standards without the necessary number of children being in the class. Also the children are admitted all through the year and not like in ordinary schools—once a year which means that there should be more teachers than in ordinary schools, like it may be the case for other kinds of handicapped children.

The provision of a *High School* for infectious children would be a great benefit as background of getting a training by which you can work without causing harm to their often deformed or anaesthetic feets or hands.

In the cases of non-infectious children, they of course should be educated along with other children. But among two mill leprosy sufferers in India, there is a great need of

separate High School for those who need hospital care. It is our experience as and institution of many children, that even though they are discharged in the age of 10 years, they often come back in thê teen ages, which seems to bring about the disease again in some cases. These children are readmitted when being dismissed from their ordinary schools and we cannot provide them with the needed education.

The vast problem of rehabilitation within Leprosy can, to a great extent, be solved in an easy and natural way, if leprosy, children could be provided with education, which in our modern age is a must for every child.

The matter could be tried out by erecting one High School for the whole South India on a nearby compound to a leprosy hospital. The children should have their own boarding and the name leprosy should not have any connection with the school. This means, that teachers, who find infectious leprosy children could refer the child there instead of dismissing them and as such leaving the child with a future in which it will be very difficult ever to obtain normal citizenship.

Many ex-leprosy patients are getting good jobs, after they are educated and rehabilitated. By this, ex-leprosy patient can help to build up the country instead of having to beg for his living.

Voluntary Organisations in the Warfare against Leprosy

DR (Miss) C. VELLUT, M.D.,
Medical Officer in-charge, Leprosy Centre,
POLAMBAKKAM.

Voluntary Organisations were the first in Madras State to take care of leprosy patients and interest in leprosy problems; they are still playing a very important part in leprosy work in this State. Thirty-two voluntary organisations have sent the report of their activities to the Hind Kusht Nivaran Sangh for the year 1963.

Most of them have the privilege of receiving grants and collaboration from Government since many years.

Out of the 150,000 leprosy patients in treatment, 100,000 are treated in or through voluntary agencies.

At the beginning most of the voluntary institutions were concerned mainly with segregation of infectious cases as it was at that time practically the only mean for leprosy control and with charitable activities in helping the needed and crippled. In recent years, all of them have opened quite a number of out-patients' clinics at the site of their institution and in mobile or static sub-centres; several institutions have also adapted themselves to leprosy control work with Survey Education—Treatment. In the four northern districts of Madras State numerous small and big voluntary institutions have sprung up which are mainly devoted to leprosy control (South and North Arcot, Chingleput and Salem districts).

The characteristics of these voluntary organisations and their views about leprosy control will vay according to their aim and they had in starting and are limited by their financial possibilities.

There is a broad variety in the type of work done by the voluntary organisations of Madras State: Research institutions—Sanatoria—Control centres and Homes for disabled and crippled. This variety should remain as the problems facing leprosy patients are multiple, specially for advanced cases. However, all the voluntary agencies should be asked to take part in the National Campaign for Leprosy Control throughout patient's clinics. These voluntary organisations are usually well staffed and well equipped and should be able to extend their facilities to Government Leprosy Control Centres when the necessity arises (Surgery—Temporary hospitalisation —Selective and temporary isolation—Centre of reference for difficult cases).

As National and International Organisations recommended direct control work of leprosy by Survey—Treatment and Education, grants from UNICEF and Government are given only for that purpose; vehicles (cars—cycles), D.D.S., microscopes, stipend for training in leprosy control, allowances for salary for medical and paramedical workers, daily allowances for patients in need of hospitalisation. For other activities the voluntary organisations have to develop according to their possibilities taking into account the activities of other institutions in the surrounding of their Headquarters.

The Christian Medical College of Vellore has accepted to train under the sponsorship of the Hind Kusht Nivaran Sangh physiotherapists for leprosy work. Voluntary organisations have been asked to send their candidates.

On the other hand the State Leprosy Officer requested some voluntary organisations to give paramedical workers' training to the state candidates and to give short session of education in leprosy to Panchayat Workers, Teachers, etc.

Leprosy Co-ordination Committee has been set up in this State. For the meetings a subject of study is chosen and a whole day is spent in lectures and discussions.

These few lines will be enough to realise that a close co-operation between Government and voluntary organisations exists and could be developed still more in Madras State. Each institution keeps its special feature and at the same time accepts to follow general directives given by the State Leprosy Officer.

We are most grateful for these arrangements of the State Leprosy Officer, Madras, Dr. V. Ekambaram who has seen clearly both the necessity and the possibility of working together and that for the most benefit of all and mostly of the patients who receive attentive care from every quarter.

Modern Method to Control Leprosy

Dr V. EKAMBARAM, M.B.B.S.,
State Leprosy Officer.

" Leprosy " is the disease which is dreaded so much, all over the world, that it is called the " Big Disease " (" Maha-rog " in Hindi, " Pedda Rogam " in Telugu, " Peria Vyadi " in Tamil). It is now gratifying to note that leprosy is curable, thanks to Modern Medical Research. Many people still do not know the true facts about leprosy, with the result that there are various wrong notions about the disease. Certain popular misconceptions about leprosy and the true facts about them are given below :—

(1) As there was no effective treatment for leprosy till recently, it was regarded as a divine curse. Hence a patient of leprosy in ancient days was treated as an outcast. As the disease is now curable, there is absolutely no reason for such an attitude towards these patients now.

(2) Some regard leprosy as an advanced state of venereal diseases. This is absolutely wrong as venereal diseases do not lead to leprosy.

(3) Many people think that they will contact the disease from the patients even by casual contact, i.e., touching papers handled by patients or travelling with them in a bus or train. This is not the truth, as leprosy can be contracted only by intimate contact for a prolonged period and that too mostly by children but rarely by adults.

(4) Many people still think that once a man develops leprosy he will not recover from the disease. As already stated, the disease is now definitely curable provided the patient takes regular treatment under medical supervision.

(5) There is also a popular idea that the disease is hereditary which is also not true. It has been found that the disease spreads from infected parents to their children, only due to prolonged and intimate contact and if the children are separated from their infected parents, they do not develop the disease. Hence the need for protecting children from the disease, which is the only ultimate solution for the control of the disease. All the patients of leprosy are not infective but only one type of them called the lepromatous type, who can spread the disease to others. It is also fortunate that the majority of the patients in our country (nearly four fifths are non-infective and only one fifth are infective. Let me now give a rough idea about the prevalence of the disease in our country and in particular in our State where leprosy is highly endemic

Leprosy is mainly a disease of under-developed countries and more prevalent in villages than in towns. Leprosy has been completely eradicated from the advanced countries of the West and the British Isles. It is still highly prevalent in Africa, Asia and the Far East.

In our country, leprosy is highly prevalent in the Eastern Coast of India, i.e., Kerala, Madras, a few districts in Andhra, Bengal, Assam and also in Bihar. It is estimated that there are about 25 lakhs patients in our country among whom roughly one-fifth are of the infective type.

Our State is highly endemic for leprosy and it is estimated that there are about 6 lakhs of patients in our State.

I shall now explain in brief a few essential facts about the disease so that the general public may have a clear idea about the nature of the disease, its effects on the patient, how it is treated and how to prevent the spread of the disease.

Nature of Leprosy

Leprosy is not a divine curse but a disease like any other disease. It is chronic in nature lasting for years leading to severe mutiliation of the patient unless properly treated and also as early as possible. The disease is caused by a germ called the 'Lepra Bacillus' which was discovered by a Norwegian Doctor called Hansen in 1874, so much as the disease is sometimes called Hansen's disease. These germs when seen under a microscope appear like small rods (red in colour) in clusters like bundles of cigars.

Leprosy affects mainly the skin and the nerves, and in a few advanced patients, the eyes and nose are also damaged. There are two types of leprosy, one the infective type (called the Lepromatous type) and the other non-infective type (Non-Lepromatous). As the name indicates, the Lepromatous type is the **infective** type and these patients unless properly treated are a danger to society as they are liable to spread the disease to others.

The Lepromatous type of leprosy is characterised by an unnatural shininess of the skin, nodules on the ears, face as well as the body (about the size of a marble) and sometimes in advanced cases, depressed nose, loss of eyebrows, blindness and hoarseness of voice. Lepra Bacilli are found in the skin and mucous membranes of these patients and so they are called the infectious type.

The Non-Lepromatous type of leprosy is characterised by patches, in which there is slight loss of the normal colour of the skin but sometimes may be red. These patches do not itch and in these patches, the patients do not feel any pain or heat. There is no hair or sweat in these patches. In advanced cases, these patients, due to damage to the nerves, develop also contracted fingers and ulcers. The lack of sensation is the important thing, one should always remember about

this type. As the name indicates these patients are not infective and so are not a danger to society though they need proper treatment due to the chances of their developing complications like contracted fingers and ulcers.

How does the disease spread

There are many popular misconceptions about the spread of this disease. Many people have an idea that leprosy is highly contagious so that even casual contact may spread the disease. As a matter of fact, leprosy is not so highly contagious as the other contagious diseases. It cannot be spread by casual contact nor is it spread by food or water like cholera or dysentery or typhoid (or by eating fish which is again a popular misconception).

As far as our present knowledge of the disease is concerned, we know that leprosy can spread only from an infective type of patient and then also only to children (whose skin being tender has not the resistance to the disease) like the skin of adults as a result of prolonged and intimate contact and not by casual contact. This is the reason why when there is leprosy in a person, it spread quickly to his children who are exposed to close and prolonged contact with him. This also explains why in many cases, even though the husband is an advanced case of leprosy, the wife is not a patient (as the wife must have come in contact with him only when she was almost an adult).

Let me once again stress here that this disease is not hereditary and that the disease spreads among members of the same family due to the close and prolonged contact than are attached to this article (Appendix II).

Treatment of the disease

One must clearly understand that all the fear of this disease and the popular misconceptions about this disease in the past have been due to the reason that there was no effective

treatment for the disease. But now the treatment of leprosy has become 'revolutionised' with the introduction of sulphones in America about 10 years ago.

The sulphones are drugs allied to the sulphanilamides. They are available in the form of tablets for oral use, and granules or powder for injections. There are also many drugs which are derived from the parent drug, e.g., Sulpetrone, Diasone which are also used in the treatment of this disease.

It is found that by taking these DDS tablets by mouth. (the dose to be fixed by a doctor), the improvement of the patients is very encouraging. The nodules which disfigure him disappear in about a few month's time, his skin condition improves rapidly and he feels very much better in a short time. As for as we know from our present experience it takes about 3 to 5 years for a patient to become completely cured of the disease provided he takes the treatment regularly.

The public are warned against 'self treatment' and over treatment with this drug. This drug is safe, provided it is taken under medical supervision but may prove dangerous otherwise.

The efficacy of the modern treatment of leprosy is well illustrated by the improvement seen in the patients treated at Leprosy Relief and control centre, a few pictures of whom are attached to this article (Appendix II).

How to prevent the spread of this disease

The problem of the control of the disease has been unsolved since centuries but now with an effective cure for the disease and a more enlightened knowledge about the nature of the disease we should be able to control it.

In ancient days, the only known method of control of the disease, was by isolating all these patients away from a residential area is, segregation in institutions called Lepper settlements.

This is not a method suitable to our country as it is practically impossible to find personnel and money for segregating the huge number of patients in our country. There are about 5 lakhs of infective patients in our country, but here are only 15,000 beds available for segregation in country.

Hence the modern method of control of the disease is achieved by the following methods, which are based on three procedures is, Survey, Education and Treatment.

1. *Survey of the incidence of leprosy.*—As area where Leprosy is reported to be prevalent should be surveyed completely and accurate estimates of the incidence of leprosy in the various places obtained. Also the environmental conditions contributing to the spread of disease must be made note of and efforts made to remove these. The survey party must also teach the rural population about the nature of leprosy, its dangers and how to prevent the spread of the disease.

2. *Treatment.*—Treatment centres should be established in all the areas reported to have a high incidence of leprosy as gathered from the survey records. The treatment centres should be studded throughout the endemic area so that every patient can get the benefit of the modern treatment of leprosy as near his home as possible without the need for walking long distances.

As this disease is more likely to spread to the contacts of patients, these contacts are examined periodically to detect new cases at the earliest opportunity and cure them without their developing any complications and also to reduce the reservoir of infection for future.

Adequate facilities should be made available for the treatment of patients in a Hospital, who have complications requiring treatment in a hospital and daily observation.

By this method, the patient, is treated in his own village and there is no disruption of the family structure nor does it cost much for the State nor does it give risk to any

problem of Rehabilitation of the patient which would arise if he were to be removed from his village to an institution for segregation. It is essential that every patient must take treatment regularly, and if need be, compelled by society to take regular treatment.

3. *Health Education.*—It is very essential in our country where still the majority of the people are illiterate, that the rural population must be educated about the true nature of the disease and how to prevent it. This should take the form (preferably) of homely talks and also by the cinema, particular attention being focussed on the improvement achieved in the condition of patients who have improved by the modern treatment of leprosy in that area.

Based on the above principles of Modern Leprosy Control there are 2 kinds of mobile leprosy units working in our State. They are called the Leprosy Control Units and Survey Education and Treatment Units. The Leprosy Control Units are started in areas with high endemicity (more than 1 per cent) and tackle a population of 1½ lakhs. The Centre is in charge of a Leprosy Trained Medical Officer who is assisted by 11 Para Medical Workers, two of whom work in the Headquarters and the remaining in the nine peripheral zones around the centre. Each zone is in charge of a qualified Para Medical worker and has a population of about 20,000. The Para Medical Worker engages in intensive control work in his zone under the supervision of the Medical Officer who visits each zone twice a month. Facilities are available at the Headquarters of the zone for Physiotherapy treatment, hospitalisation of patients requiring treatment for complications and also a laboratory investigation.

Survey, Education and Treatment Unit is usually attached to a General Medical Institution and tackles a population of about 20,000 around the Institution located in an area of low endemicity. The Para Medical Worker of the Survey Education and Treatment Unit engages in all activities

of a control unit but under the supervision of the General Duty Medical Officer, of the Institution. This is a practical method of integration of Leprosy relief with general medical relief. A list of the Government Leprosy Control Units working now in our State is found in Appendix 1.

As it is our aim to cover the entire endemic part of our State with leprosy relief measures, it is proposed to open 122 more Survey Education and Treatment Units in our State before the end of the Third Five-Year Plan.

Also, more centres are proposed to be opened in our State during the Fourth Five-Year Plan, so as to completely cover our State with Leprosy Relief Measures.

The proposed targets for the Fourth Five-Year Plan of our State are as follows :—

Number of Leprosy Control Units.	Number of Survey Education and Treatment Units.	Number of Training Centres.
10	600	1

It is also proposed to open urban health education units in important cities in our State as to educate the urban population about leprosy and to induce them to take treatment for leprosy. It is evident from the above, that all possible and essential steps are being taken by Government to check the spread of the disease.

Protection of Children from Leprosy

One cannot adequately stress the importance of protecting children from this disease. Every talk to the public on this disease must include advice on this, as children are most susceptible to this disease. If the patients of leprosy are advised not to touch children the disease can be wiped out from a community very shortly. As the majority of our patients are poor their living conditions are very inadequate. Most of them live in small hut and hence the children are exposed to close and intimate contact with such patients. It

is here that the Philanthropic members of the public should come forward to help the Government in tackling the difficult question of taking care of the children of infected parents by rendering assistance to Government in building preventoria (Homes for the healthy children of infected parents) in rural areas or by offering to bring up these children by adopting them. (The rich often happen to be childless in contrast to the poor who usually have too many children !)

Considering the magnitude of the problem and the necessity for checking the spread of the disease, the Government have established special mobile Leprosy Units throughout our State and also ordered that even general medical institutions should treat leprosy.

Before I conclude I would advice the patients of leprosy to remember the following :—

1. As leprosy is now curable, there is no need to be dejected or unhappy.

2. As the cure is quicker and surer if diagnosed and treated early one should consult a doctor as soon as the disease as suspected to be present in any one.

3. As the success of the treatment depends upon regularly, one should and must be regular for treatment.

4. As the children are the most susceptible to the disease a patient should avoid touching children either his own or others.

5. As treatment by quacks is dangerous, one should always take treatment from qualified doctors and follow their instructions carefully.

6. As many of the complications of leprosy, i.e. ulcers, etc., are due partly to careless living habits, one should take great care of one's limbs and follow only occupations suitable to one as advised by the doctor.

As regards the general public, I would appeal to them to have a sympathetic attitude towards these patients, co-operate with the medical authorities by helping them in the establishment of leprosy clinics. It is found that in many places the general public due to a wrong idea that the disease may spread in the village if a leprosy clinic is constructed there, have objected to the establishment of these clinics is a wrong step. The public should induce leprosy patients to attend the clinic regularly and also take steps (as advised above) to avoid contact with children.

In conclusion, I should state that this disease, which is no longer the ' Big Disease ' as was known before, can easily be eradicated from our country provided the patients and the public give their wholehearted co-operation to the medical men engaged in this work.

Let us remember that the only way we can pay homage to the Father of our Nation, Bapuji, is by tackling this problem in a sincere manner, which he urged us to do with all our resources.

APPENDIX I.

Government Leprosy Subsidiary Centres:

1. Government Leprosy Treatment and Study Centre Tirukoilur, South Arcot district.

2. Government Leprosy Subsidiary Centre, Vridhachalam, South Arcot district.

3. Government Leprosy Subsidiary Centre, Veeraperumanallur, South Arcot district.

4. Government Leprosy Subsidiary Centre, Tiruvannamalai, North Arcot district.

5. Government Leprosy Subsidiary Centre, Tiruvettipuram, North Arcot district.

6. Government Leprosy Subsidiary Centre, Attur, Salem district.

7. Government Leprosy Subsidiary Centre, Kodumudi, Coimbatore district.

8. Government Leprosy Subsidiary Centre, Tiruvellur, Chingleput district.

9. Government Leprosy Subsidiary Centre, Perambalur, Tiruchirappalli district.

10. Government Leprosy Subsidiary Centre, Aruppukottai, Ramanathapuram district.

11. Government Leprosy Subsidiary Centre, Paramankurichi, Tirunelveli district.

12. Government Leprosy Subsidiary Centre, Orathanad, Thanjavur district.

13. Government Leprosy Subsidiary Centre, Sembatti, Madurai district.

14. Government Leprosy Subsidiary Centre, Thuckalay, Kanyakumari district.

Control Units

1. Government Leprosy Control Unit, Kallakurichi, South Arcot district.

2. Government Leprosy Control Unit, Elathur, North Arcot district.

3. Government Leprosy Control Unit, Namakkal, Salem district.

4. Government Leprosy Control Unit, Krishnagiri, Salem district.

5. Government Leprosy Control Unit, Kancheepuram, Chingleput district.

6. Government Leprosy Control Unit, Palni, Madurai district.

7. Government Leprosy Control Unit, Sivagiri, Tirunelveli district.

Survey Education and Treatment Units

1. Survey Education and Treatment Unit, Valavannur, South Arcot district.

2. Survey Education and Treatment Unit, Periakulam, Madurai district.

3 Survey Education and Treatment Unit, Nilakottai, Madurai district.

4. Survey Education and Treatment Unit, Kulithalai, Tiruchirappalli district.

5. Survey Education and Treatment Unit, Karur, Tiruchirappalli district.

6. Survey Education and Treatment Unit, Gobichettipalayam, Coimbatore district.

7. Survey Education and Treatment Unit, Kangayam, Coimbatore district.

8. Survey Education and Treatment Unit, Erode, Coimbatore district.

9. Survey Education and Treatment Unit, Sirkali, Thanjavur district.

10. Survey Education and Treatment Unit, Pattukottai, Thanjavur district.

11. Survey Education and Treatment Unit, Chettinad, Ramanathapuram district.

12. Survey Education and Treatment Unit, Virudhunagar, Ramanathapuram district.

13. Survey Education and Treatment Unit, Arni, North Arcot district.

14. Survey Education and Treatment Unit, Arkonam, North Arcot district.

15. Survey Education and Treatment Unit, Tiruppathur, North Arcot district.

16. Survey Education and Treatment Unit, Gingee, South Arcot district.

VOLUNTARY ORGANISATIONS

1. Kasturba Kushta Nivaran Nilayam, Malavanthangal, South Arcot district.

2. Navajeevan Health Centre, R. K. Pet, Chingleput district.

3. Hind Kusht Nivaran Sangh, Kancheepuram, Chingleput district.

4. Dayapuram Leprosy Hospital, Manamadurai, Ramanathapuram district.

5. Schiefflin Leprosy Research Sanatorium, Karigiri, North Arcot district.

6. Hind Kusht Nivaran Sangh, Tiruchirappalli district.

7. Leprosy Centre, Polambakkam, Chingleput district.

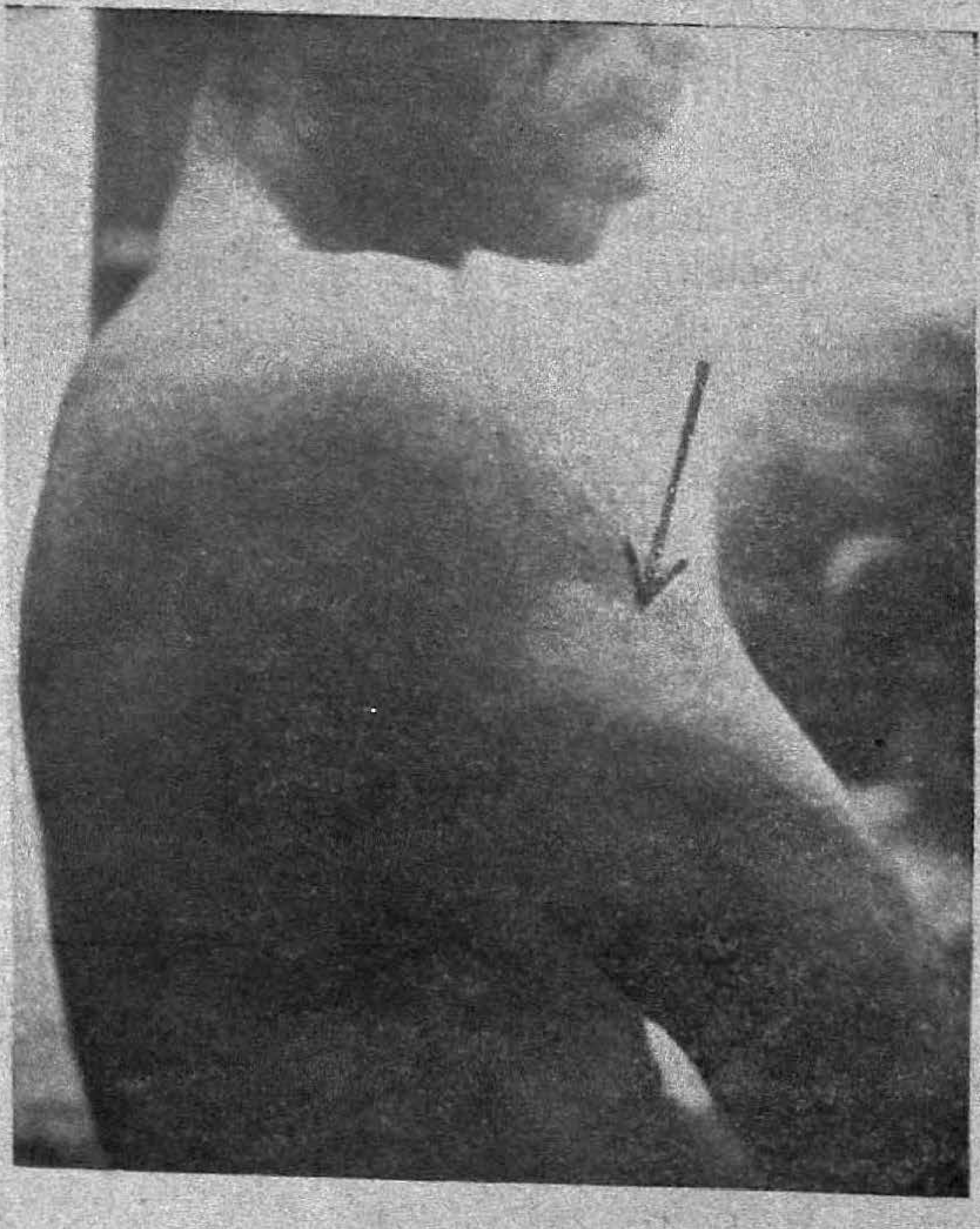
8. Wallajah Leprosy Control Scheme, Ranipet, North Arcot district.

APPENDIX II.

PHOTOS OF VARIOUS TYPES OF LEPROSY PATIENTS

(Non-Infective Type of Patients (Non-Lepromatous)

(Those who are not infective to others as no leprosy germs are seen in the skin or nose of these patients).



Flat patch on side of right arm—There is loss of sensation, hair and sweat in the patch. (Arrow indicates the patch)

Thick raised patch on back—There is loss of sensation, hair and sweat in the patch.

Infective Type of Patient (Lepomatous)

(Those who can spread the disease to others as Leprosy germs are found in their skin and nose).

Note—Thickening of ear, nostrils, as well as skin.

Side view of the same patient.
Note the thickening of face, ear lopes.

Leprosy is curable—This is proved by the following photos of patients, who showed, marked improvement with regular treatment by sulphones :

BEFORE Treatment.

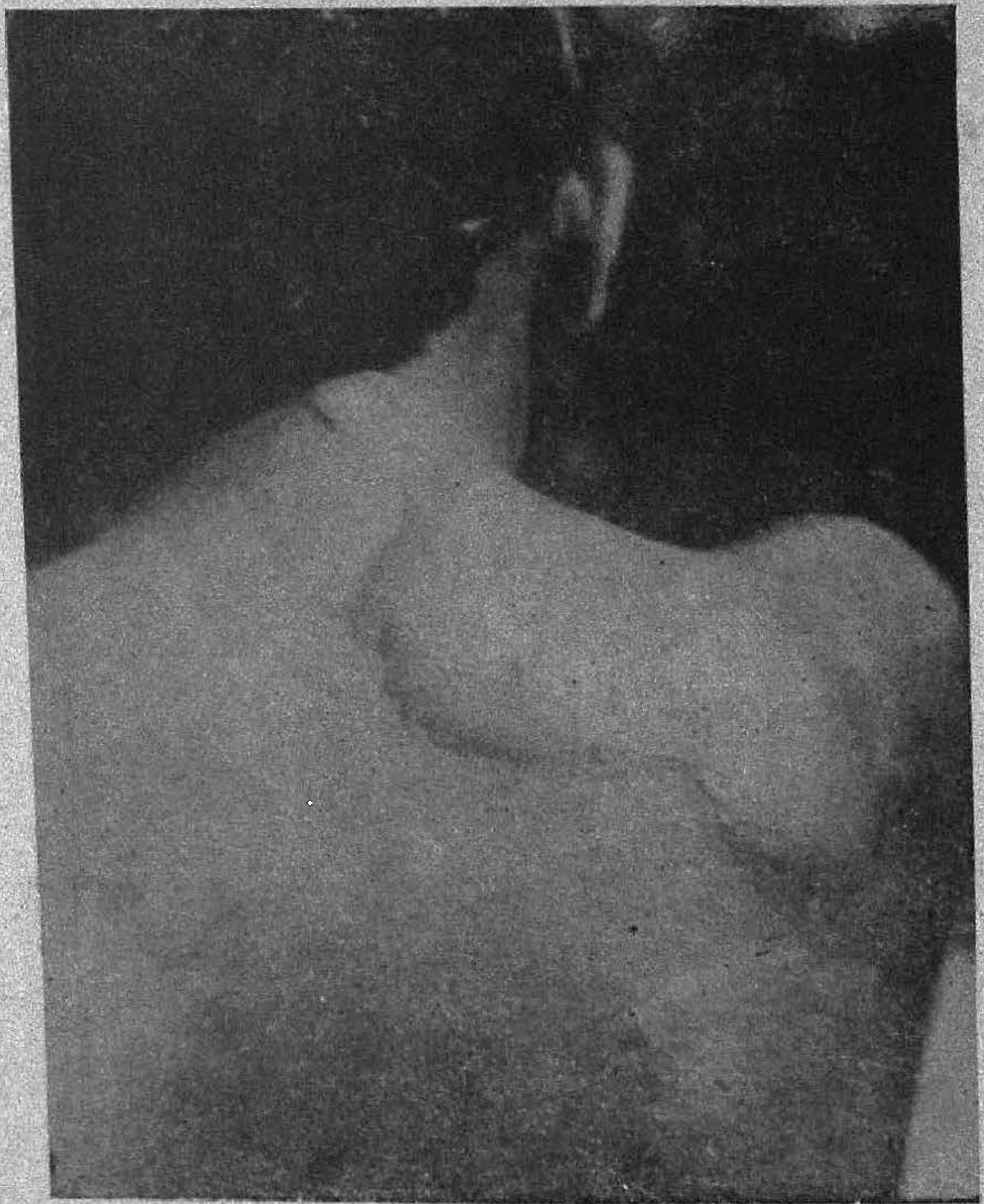
Note nodules on right arm and fore arm before treatment.

AFTER Tre tment.

The same patient after treatment with sulphones for about a year.

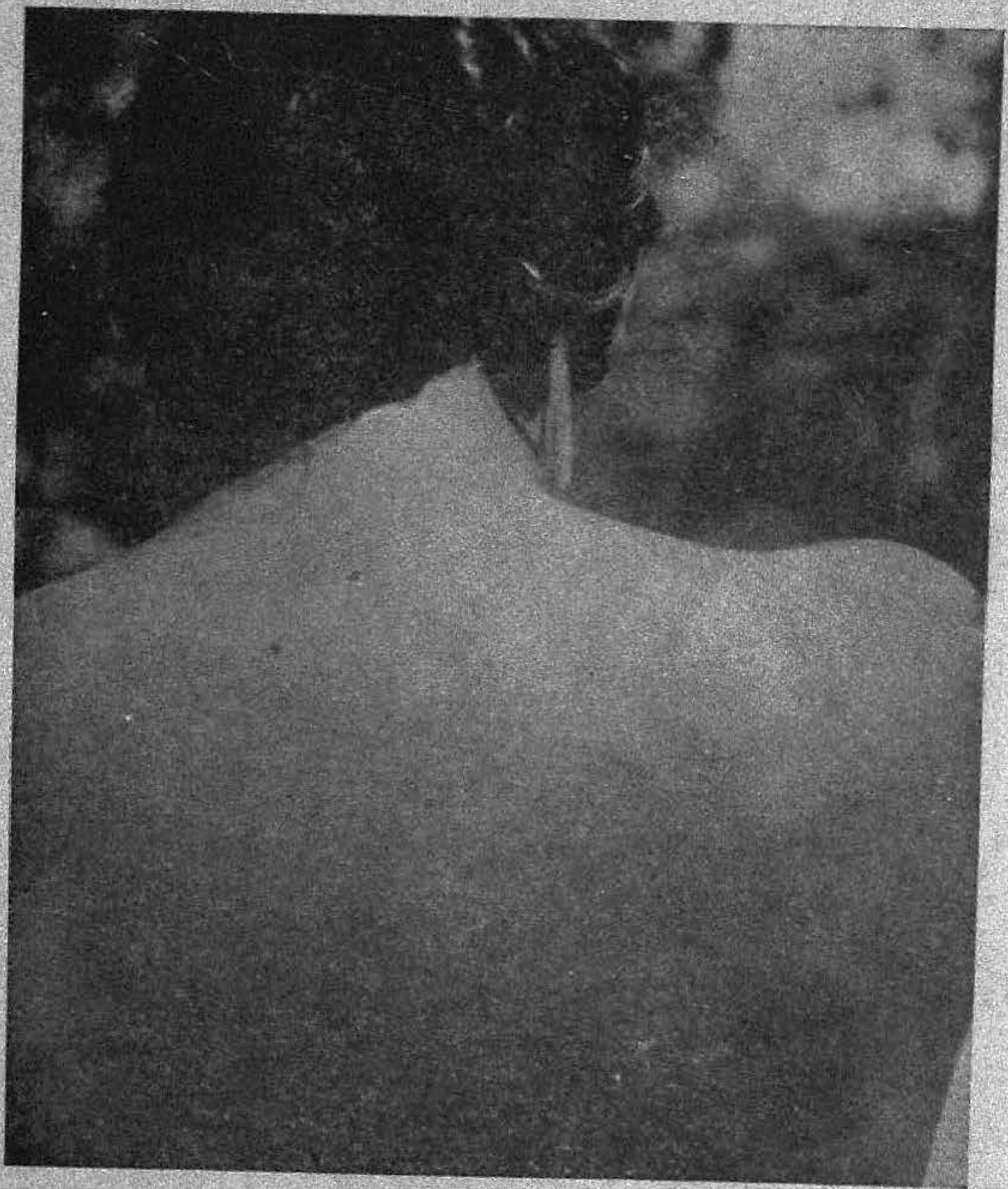
Non Infective type of patient

BEFORE Treatment.



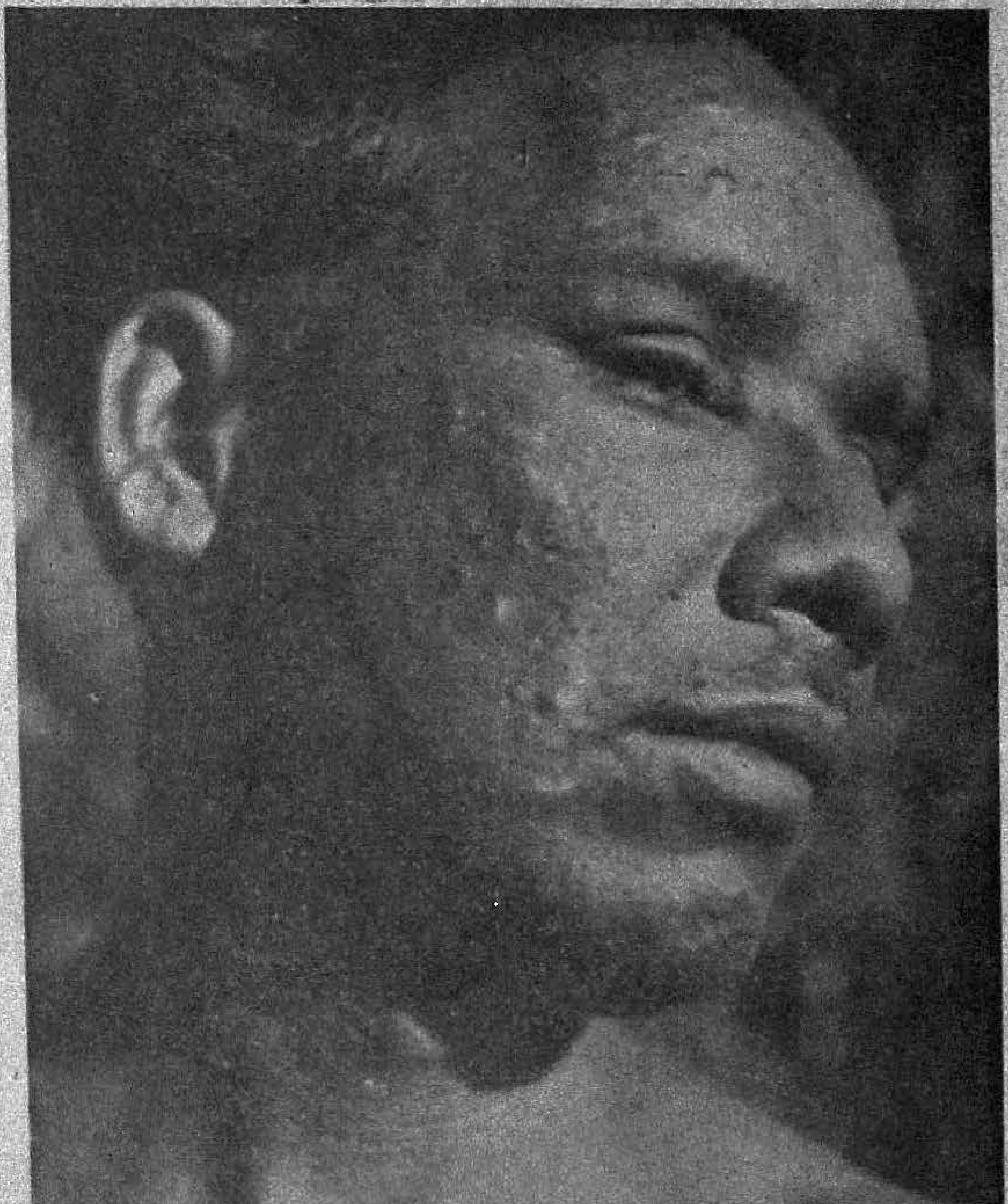
Note thick raised patches on the right side of the back.

AFTER Treatment.



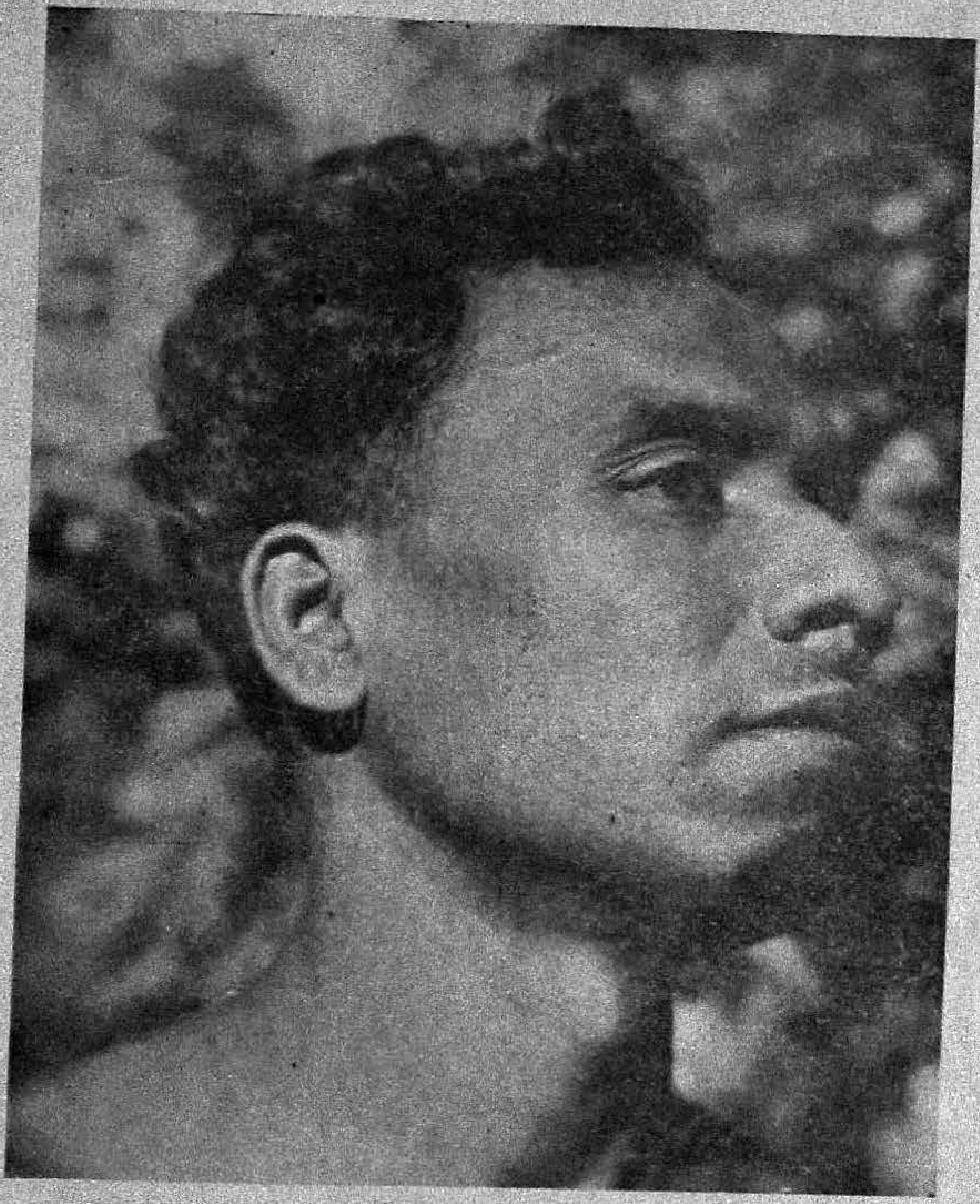
Note the improvement in the patient after treatment with sulphones for about six months.

BEFORE Treatment.



Note thick raised patch on the right cheek

AFTER Treatment.



Note the improvement of the patient after treatment with the sulphones for about six months.